

MINING WORLD

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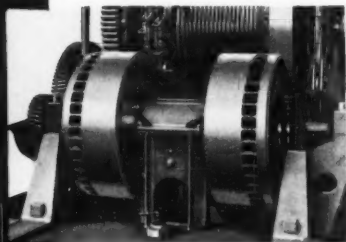
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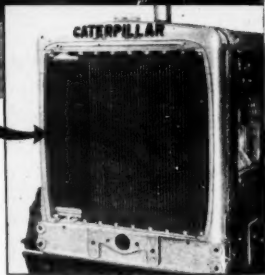
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6	125
7	150
8	175
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10	250
11	300
12	350
13	400
14	450
15	500
16	550



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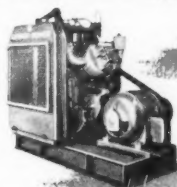
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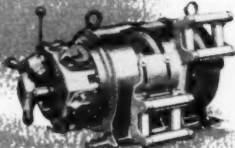
For further information on the popular Gardner-Denver models shown here, write us today!



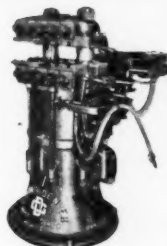
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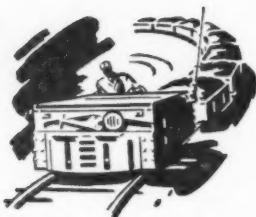
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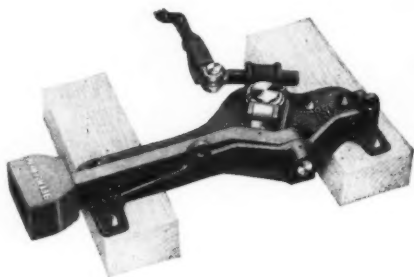
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MINING WORLD



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The contractor has expressed his complete satisfaction with the performance and economy of Timken carbide insert bits on this project.

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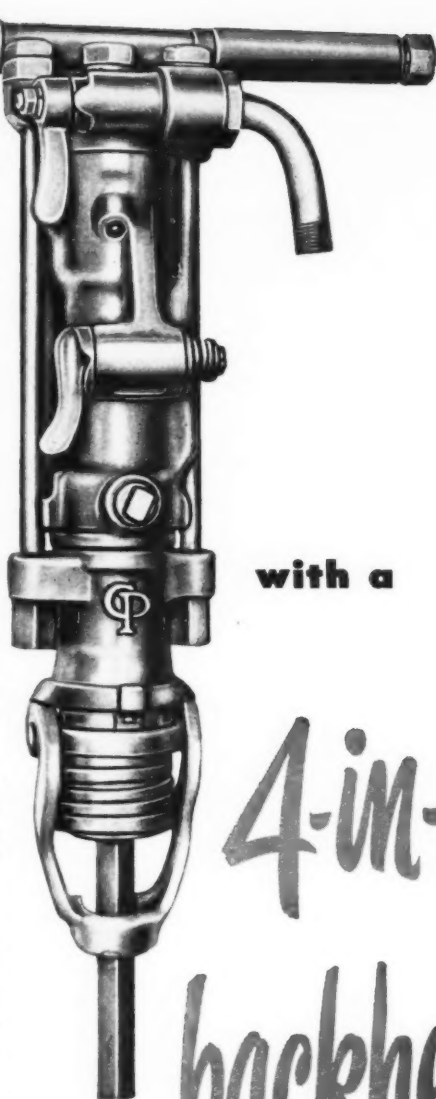
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New in design . . . easy to hold . . . tops in drilling speed, rotation, hole cleaning and all-around performance . . . is the new CP-59 Sinker Drill.

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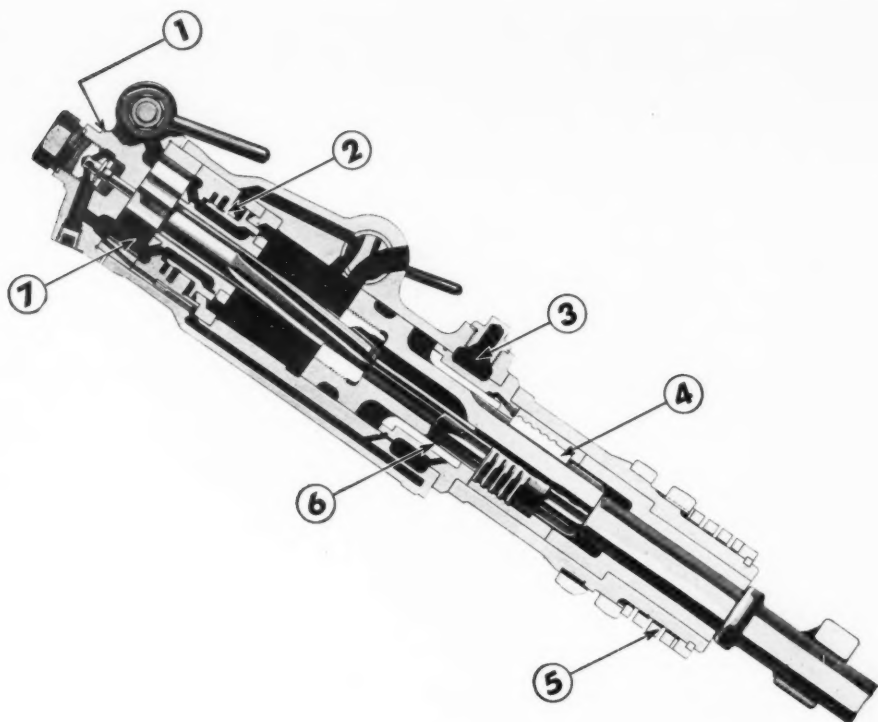
Rotation nut and cylinder bushing liner are bronze, to eliminate scoring and reduce maintenance.



with a

4-in-1 backhead

For complete information, ask for SP-3009.



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- 5 Large, flexible retainer spring assures easy operation.
- 6 Replaceable bronze cylinder bushing liner makes it easy to maintain full cushion and piston alignment.
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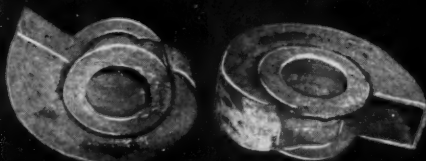
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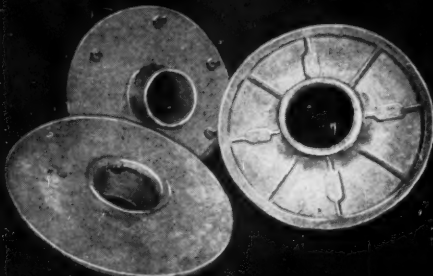
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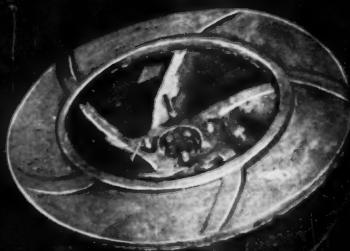
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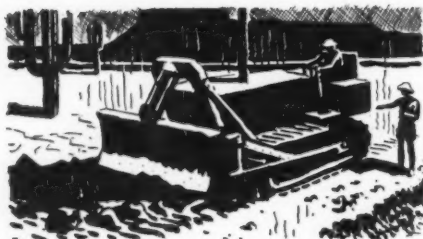
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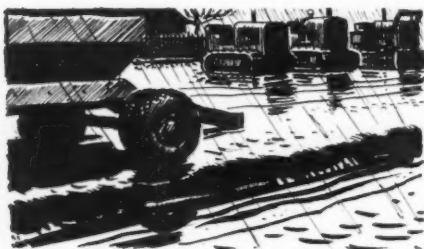
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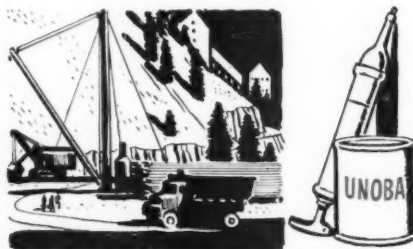
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MINING WORLD

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68L49



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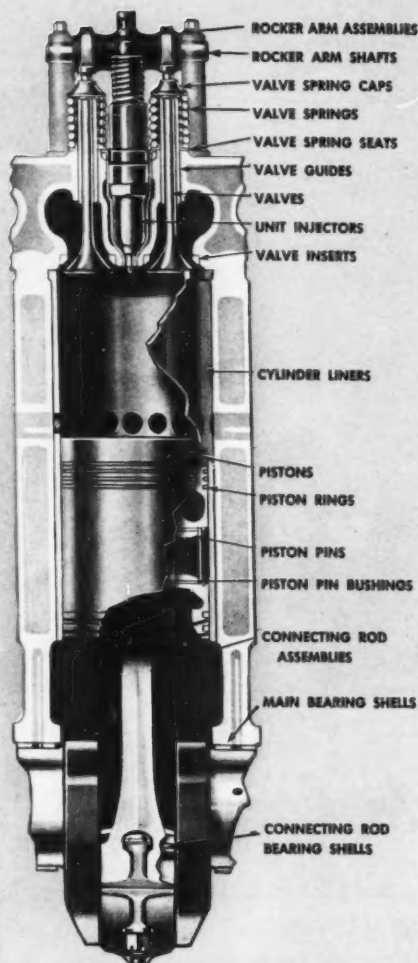
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MINING WORLD

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A Miller Freeman Publication

Published monthly except in April when publication is semi-monthly

OCTOBER, 1949

VOL. 11 No. 11

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DRIFTS AND CROSSCUTS

Government Aid or Interference

By unanimous approval the Senate Interior and Insular Affairs Committee approved a measure in late August that sets up a National Minerals Conservation Board and may provide the entering wedge for the Federal Government to set up metals controls. Among the items provided by the measure is for the Government to set a maximum and minimum price to pay for metals and minerals.

Senator Joseph C. O'Mahoney of Wyoming sponsored the new bill that would set up the Minerals Conservation Board. Salient points are that the board would be headed by the Secretary of the Interior, would decide what producers of minerals, ores or metals should get aid and, in addition, would promote exploration by sharing in the cost of exploration projects.

For the time being, the proposal is said to be for the purpose of aiding the nonferrous mining industry. This is because of the decrease in demand for metals and the keen competition from foreign sources of supply. To some observers, the all-inclusive feature of the proposal is that it might be extended to coal and oil, thus blanketing the industry. If enacted, some industry leaders fear the bill may well become the beginning of intervention by the Federal Government in the mining industry.

Senator O'Mahoney declared in defending his measure that "we can see the domestic industry go down the drain, or we can resort to some form of Government interference." In that sentence is the theme that the domestic miners look at with misgiving. Had the word "aid" been substituted for "interference," the proposed bill would have merited more consideration from producers of non-ferrous metals.

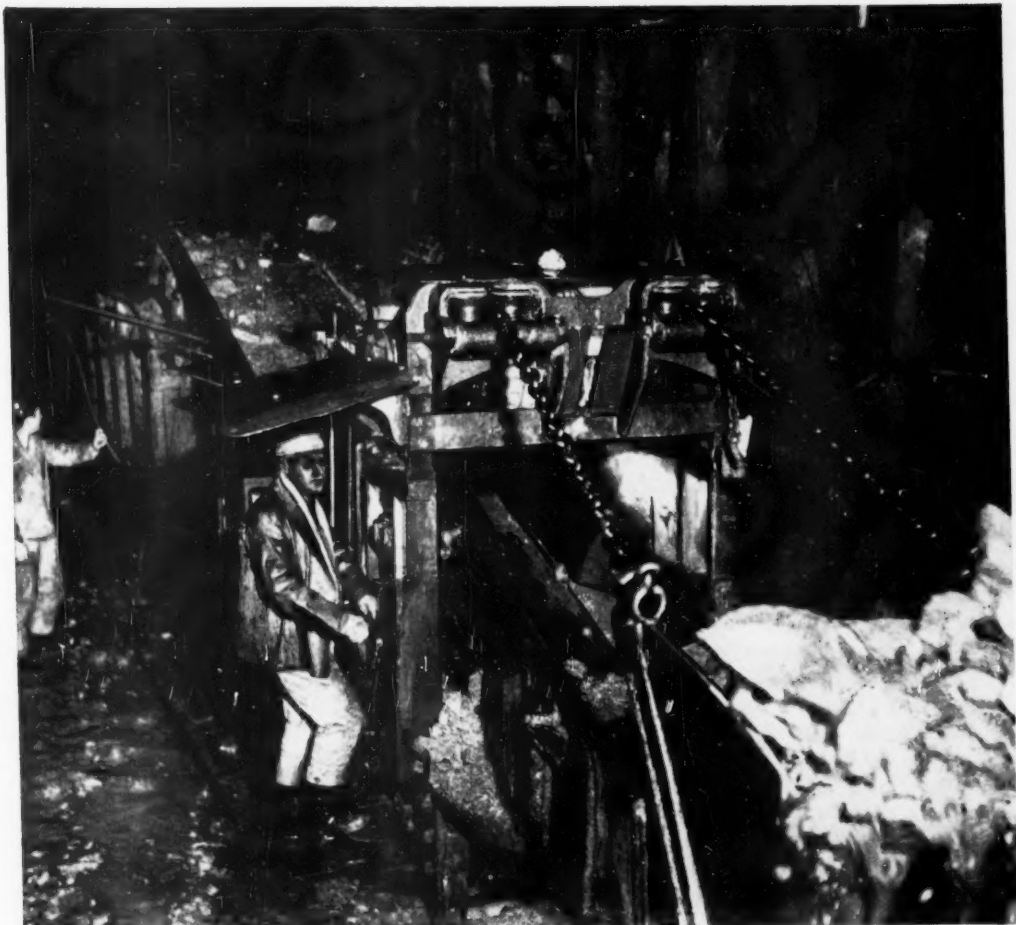
Furthermore, Senator O'Mahoney declares that a protective tariff is out of the question and that we must turn to some other form of support of domestic minerals as well as conservation of mines that would have to close down otherwise. Regarding the tariff question, the United States is nearer to a free-trade status than at any time in history because most goods enter duty free. In 1932 the rate on dutiable goods was 59 percent and slid to 14.3 percent in the last year. Witness the attempts to get 2 cents of the prewar 4-cent copper duty reimposed and draw conclusions. Any proposals for protective tariffs on minerals and metals will be opposed strenuously by some countries, chiefly a number of Latin American nations, that have given large concessions to United States capital for development of mineral deposits. It is understood that the State Department is opposed also to the imposition of import duties on mineral commodities on the grounds that such actions on our part would impede the economies of many of the Latin American nations and that United States capital in those countries would be discommoded and put in a vulnerable position. Another argument advanced by the State Department, take for what it may be worth, is that United States companies operating abroad are entitled to a market for a part of their output to provide them with sufficient dollars to proceed with their development programs.

The defense authorities take virtually the same position as the Department of State, voicing the idea that mineral development should be encouraged throughout the hemisphere even though it might be necessary to place a large number of mines in a stand-by position!

Surplus production of nearly all nonferrous metals exists abroad at this time. Tying this fact to the possibility that prices in the United States might be held at an artificially high level, foreign production would be encouraged and raised and with United States participation in foreign mines increasing a growing number of domestic mines would be placed in a stand-by condition and the clamor for a market for a part of the foreign mines output to provide dollars for their development programs would increase steadily.

Reviewing briefly the principal points of the proposal,

MINING WORLD



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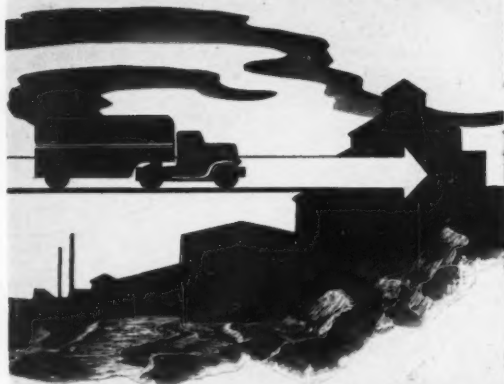


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the following stand out: The proposed board would consist of the Secretaries of Interior, Defense, Commerce and Treasury, the Secretary of the Interior to act as Executive Chairman. The Board has full authority to buy any mineral or metal, of any grade, in any quantity, at any price, if the purchase is considered desirable to preserve a resource for national security or economy. Direct aid may be granted for the same reasons without limit to preserve mines in stand-by condition.

In the case of mines producing up to 100 tons monthly of combined copper, lead and zinc metal, it is necessary that one-half of the "reasonable" costs be met by the Government should it be determined that "a reasonable promise of developing unknown or undeveloped sources of metals or minerals" exists.

For approved projects, exploration aid may be granted to an extent discretionary with the Board and the Secretary.

The General Services Administration receives all material contracted for, the Munitions Board may take and pay for what it wishes to stockpile, the remainder going to a "buffer stockpile" to be sold at some future time on the open market.

No provisions require the payment of profits.

Applications must all be passed upon by experts from whose decision the Secretary and the applicant may appeal to the Board, whose decision is final. This no doubt will require geological and mine examinations and the operation could be cumbersome and time-consuming, and in case of a large number of applicants—and no miner doubts the number—a large staff will be required to process them without undue delay.

Bureau of Mines Reorganizes

On September 1, a reorganization went into effect for the U. S. Bureau of Mines. This had been under consideration for quite some time and with its inception new ways and means of improving the efficiency of the Bureau's operations and of increasing its service to the public have become a fact. Under the new organization, maximum responsibility will be delegated to experiment stations and offices in the field, thus leaving to the headquarters staff much greater opportunities for planning. Coupled with this will be the attempt at better integration with the minerals activities of other Government agencies.

Secretary of the Interior Krug is to be congratulated upon initiating a program which has long been needed. The new organization promises to cut the red tape in the Bureau of Mines' aid to the industry. Furthermore, an important item is that it will be cheaper to operate. With Director James Boyd in charge, the industry watches to see if it will provide more information in a shorter time than was possible under the old set-up.

Stockpiling Again

Recently, the National Munitions Board submitted its semi-annual report to Congress with the recommendation that stockpiling of the nation's reserve of strategic and critical materials be no longer delayed. Furthermore, the Board reported that owing to a lack of money during the first half of 1949 the opportunity to purchase on spot terms 15 different materials had gone by the board. Physical stockpiles acquired by June 20, 1949, represented 28 percent of the Board's objectives dollar wise, and the cost of the complete stockpile will come to \$3,217,000,000, as compared with the original estimate of \$3,700,000,000.

If the Board's recommendations be considered, it will be good news to domestic producers if a way can be worked out so that domestically produced metal goes into the stockpiles. In the report is found the same evasiveness that has pervaded the entire stockpiling program regarding the quantity of materials earmarked for purchase. Time might work a change in the thinking of the Munitions Board so that the industry may have an indication of the quantity of the various metals and minerals to be stocked and the size of the current supply.

—J. B. D.

MINING WORLD

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For two years this Cummins-Powered Model 1201 Lima shovel worked 24 hours a day, six days a week for Terteling Brothers Company, Inc., at the Vogue Coal Company strip mine near Madisonville, Kentucky.

The shovel, powered with a Model LI-600 Cummins Diesel and equipped with a six-yard bucket, digs unblasted coal out of a thick seam and loads up to 575 tons per hour into a fleet of seven Cummins-Powered Euclid Coal Haulers. These hauling units carry up to 45-ton loads, and in one typical eight-hour shift, working on a three-mile round trip, moved a total of 4,300 tons.

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MINERS DEPRIVED OF JUST REIMBURSEMENT AS CONTRACT SETTLEMENT AMENDMENT IS VETOED

In vetoing the Contract Settlement Amendment, H. R. 834, the President again showed the complete lack of sympathy of his Administration with the American mining industry. His veto message stated, "The principle that the government should compensate war contractors, and volunteers acting without contracts, for losses sustained by them in activities related to the war has not generally been accepted."

Not only is this statement inconsistent with the facts, but it again is evidence that the Administration feels it is the law and that the will of the people expressed through Congress is something either to be negated or sidetracked by means of departmental interpretations. About \$10 billion have been paid to other war contractors. Miners recovered only \$50 or \$60 thousand.

The President's message said further that mining activities "were carried out within the traditional free-enterprise system," and that if the miner wished to take the risk of producing for the war effort "it was assumed that he would bear the loss."

What a difference there is between the Roosevelt and Truman philosophies in this respect! On April 17, 1943, President Roosevelt stated, "It is a governing principle that the price paid bears a reasonable relation to the costs of production and the earning of a fair return over the costs of each separate producer." Mining people, like all other producers, had the right to consider this statement of the President of the United States as binding on the Government. The Truman Administration has repudiated the obligations of the Roosevelt Administration in the veto message on H. R. 834.

Another cynical note in the veto message was the statement: "I do not believe the mining industry as a whole wants to adopt the policy that the Government should guarantee it against loss in time of emergency." The precedent of the War Minerals Relief Act of 1917 is entirely ignored, and also one may note that Truman has asked that foreign investments be guaranteed 100 per cent against any kind of loss. The misunderstanding of the presidential advisers is made plain by calling this a new principle. It not only follows the 1917 Act, but is merely a clarification of the powers already granted the agencies by the Act of 1944, but which

apparently they exercised for the benefit of everyone but miners.

It seems sufficiently clear that in the future the sensible miner will do his digging abroad.

● Change in Field Indicated

Legislative trends indicate a growing importance of the Bureau of Mines in the economic rather than the technological field of mining. The Administration-approved draft of the O'Mahoney bill, S. 2105, dated August 16, 1949, leaves aid to the industry entirely up to the Secretary of the Interior or his appointee. The McCarran version of the Contract Settlement Amendment leaves it to the Bureau of Mines to determine which claims are just and to recommend to Congress the necessary legislation for settlement in each individual case—a cumbersome procedure. If these bills pass as written, a path will be beaten from each mine to the Interior Building in Washington, with detours to the nearest Congressman's office.

● Security Board Head

From time to time, complaints have been registered on this page about the headless condition of the National Security Resources Board. For more than eight months, since the resignation of Arthur Hill, the board has just been another dependency of Steelman's office, for, when the Senate failed to confirm Mon Walgren as chairman, the President stubbornly refused to nominate anyone else. Now, it is rumored around Washington that the moment Congress goes home Walgren will be handed an interim appointment.

● Bureau Is Reorganizing

Some changes finally are being made in the organization of the Bureau of Mines and they appear to be for the better though they do not go down to the grass roots. Nine regional directors will be appointed to supervise the activities. In each region the director will be responsible for all activities. Eight regions cover the domestic areas, including Alaska, and the ninth covers foreign activities and will be under Elmer Pehrson. J. H. Hedges will head a new Minerals Division which will take the place of the mining and metallurgical divisions, and which will absorb part of the functions of certain other sections.

Reorganization of the bureau is

well overdue and the mining industry will watch the outcome carefully to see if this is part of the answer.

● Provides for Leadville Tunnel

If the Senate amendments to the Interior appropriation bill prevail, the Government will sink another half-million dollars into the Leadville tunnel. It would be a shame to let this job go unfinished after so much money and effort have been expended already.

● Canadian Contract Verified

The Munitions Board has confessed to having made a contract with Canadian producers for 200,000 tons of copper to be delivered over a five-year period with a floor price of 18 cents. This will be cheerful news for our out-of-work domestic copper miners.

● Not Much Help There

Not long ago a delegation of Congressmen (Granger of Utah, Peterson of Florida, Engle of California, Baring of Nevada, Mansfield of Montana, and Patten of Arizona) called on the President to tell him of the great distress in the domestic mining industry. It is said the President was somewhat skeptical, but remarked that he could cure the situation merely by sending a directive to the Munitions Board to follow the "Buy American" features of Public Law 520, and that he did not approve of subsidies "for the mining industry." The President was quoted as expressing sympathy and saying that "something should be done to help."

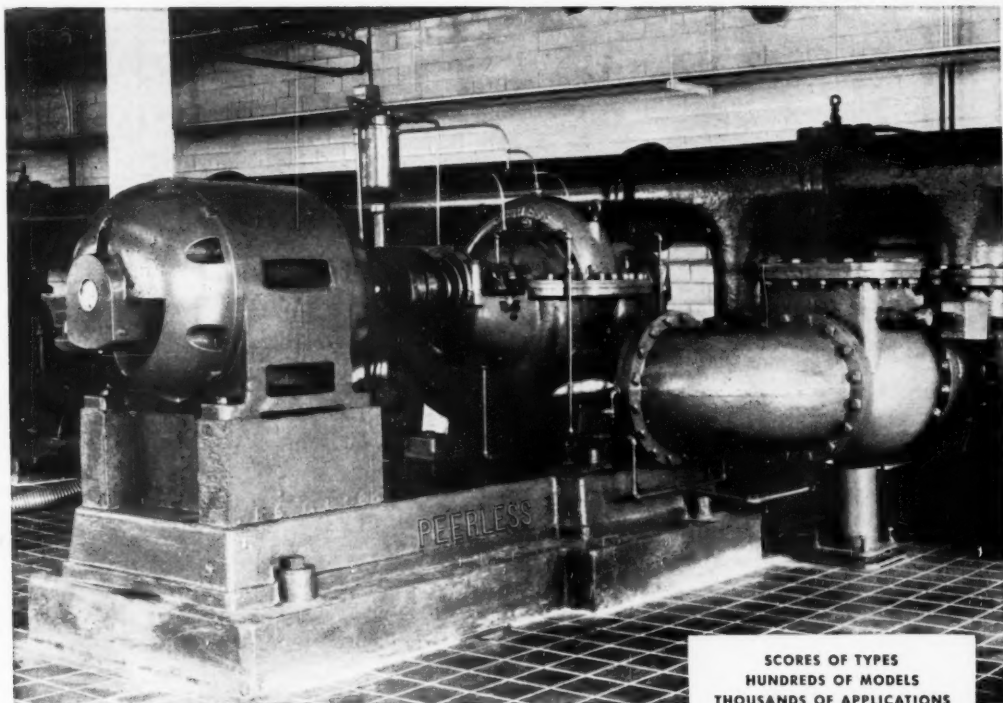
Since that interview a new stockpile report has been issued by the Munitions Board. It contains this very interesting statement on page 21: "The stockpile would not be operated to sustain production or employment, although where they occurred as a result of scheduled procurement such effects would be advantageous." A big help, what?

● Approves Copper Tariff

The bill to restore the copper tariff received favorable action by the Senate Finance Committee by the skin of its teeth. Deadlocked in a 6 to 6 vote, Senator Connolly was the thirteenth member to vote and, much to everyone's surprise, he cast his vote in favor of the bill.

Connolly's close association with the Administration's foreign program made this the more astonishing, but it probably is another indication of the slackening grip the President has over congressional policy. The bill, curiously enough, was combined with one to continue the suspension of duty on metal scrap.

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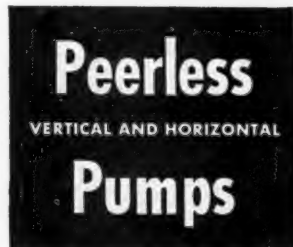
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The heavy-medium separation and fines washing circuits of the Mary Ellen are housed in this Quanset hut structure. The conveyor on the right delivers ore from the crushing plant and the building behind the conveyor is the truck maintenance depot and offices. Note the railroad line running under the mill building. The concentrate bin is housed above this track and a similar set up on the left end of the building provides storage and haulage facilities for waste.

HMS TACONITE TREATMENT

Stanley Mining Company makes first attempt to recover taconite in small unit with successful treatment of 300 tons of crude ore hourly

Mine operators on the Minnesota Iron Ranges are evincing more interest in the operation of the Mary Ellen Mine and its heavy-media separation plant than is normal for a property of its size. Reason: The Mary Ellen is mining banded taconite, the only mine in the area working on the material and one of the two plants which has undertaken the treatment of taconite on anything approaching a commercial scale.

As the reclaiming of increasingly lower grades of ore from the pits becomes necessary, every experiment in beneficiation is followed with keen interest. And the Mary Ellen is an experiment, but an experiment that gives strong promise of success.

Being a guinea pig is not a new roll for the property. Opened originally in 1924 by Emmett Butler, the mine never was a producer of merchantable (direct shipping) ore. A jig plant was installed as the first attempt

on the Ranges to treat any low grade material other than straight wash ore; and 500,000 tons of concentrate containing over 55 percent natural iron was produced in a four-year period. A spotty manganese condition in the pit made the production of Bessemer grade ore difficult, and the operation was abandoned in 1928.

This was not the only experiment of the mine's first operator. Among the other pioneering efforts of Mr. Butler are listed the first heavy-media separation process in the Cuyuna Range. It was here that much of the early development of the ferro-silicon process took place, and it was in another Butler plant that much of the early proving was done on the Akins spiral as a separatory vessel.

The basis of the Mary Ellen's success potential lies, of course, in the term "banded." The material entering the plant is a multi-layered rock in which the bands of blue, relatively

high grade hematite are plainly visible between the bands of very low grade of taconite. The layman's eye makes a comparison between it and the wash ores of other Mesabi districts. The difference: The wash ore is composed of alternate layers of iron ore and silica very loosely bound and with obvious lines of cleavage and the banded taconite is made up of much thinner layers of iron ore and lean mother rock with a hard, solid bind between the layers. Old timers on the area look at the haulage trucks and ask, "Are you sure this is the ore?"

Ore grade is about as low as any being mined on the range. Most of it is in the low 30 percent bracket with some ranging as high as 45 percent iron. The final concentrate has been averaging 53 percent natural iron (often higher) and 13 percent silica. The tailing runs under 25 percent

Left: In this front view of the crushing plant can be seen the receiving bin with Bathke pan feeder below, and the Akins 78" simplex classifier which washes part of the minus $\frac{3}{4}$ " material, to reject a low grade product, before it is sent to the HMS plant. The haulage unit is a 15-ton Euclid with 200-hp. Cummins NH5 diesel engine. **Right:** View of the back of the crushing plant showing the control house, screens and two 48" Tel-smith gyrasphere crushers. A 15-ton Euclid with 150-hp. super-charged Cummins H5 engine is at the receiving hopper.





Left to right: Robert Kulaszewicz, shift foreman, Steve Kovatovich, master mechanic. The men who keep the ore moving through the Mary Ellen mill: Frank Press, general foreman, H. F. Manseau, superintendent. Vernon Larrive, electrical foreman, Arthur Lesar, welding foreman.

iron and about 60 percent silica. While the tailing figure will seem fantastic to nonferrous metal miners, it is probably the lowest grade reject on the ranges with the exception of the very tiny experimental flotation plant of the Minerals Separation Company that operates on the hematite bearing fines of a washing plant.

The Mary Ellen, an open pit mine of about 200 acres, and the beneficiation plant is operated by the Stanley Mining Company of Biwabik, Minnesota. Chairman of the Board, Emmett Butler; president, Patrick Butler; vice-president in charge of operations, Frank S. Bergstrom; superintendent, H. F. Manseau. This personnel has also served to focus attention on the property. In his many years in the district, Mr. Butler has developed a reputation as a man of shrewd foresight; Frank Bergstrom is known as a "good operator." Both reputations seem likely to be upheld at the Mary Ellen.

A Small Producer

By iron range standards, the Mary Ellen is a tiny operation handling some 300 tons of crude ore per hour without overloading the circuits.

Mining practice is normal for the district except that the ore is probably somewhat harder than average and hence requires more breaking. A Lima Model 1201 diesel shovel with a 3-yd. dipper is used for loading into 15-ton end dump Euclids powered by 150-hp supercharged HS and 200-hp NHS Cummins diesel engines. A second Lima, a $\frac{3}{4}$ -yd. Paymaster diesel, is equipped with dipper, drag-line bucket, clam shell bucket and crane boom for general utility work.

Briefly, the treatment consists of crushing the ore to a top size of about $\frac{3}{4}$ " and washing most of the relatively fine material in a classifier with the

overflow product going to waste. The dewatered product of the classifier joins the crushed material and is screened at $\frac{3}{16}$ ". Screen oversize is beneficiated by heavy-media separation methods while the fines are subjected to two stages of washing in modified classifiers. The concentrate from both circuits is blended for shipment.

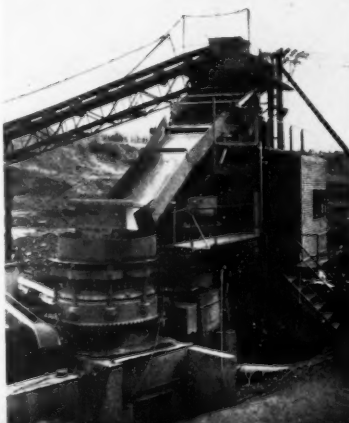
Crush and Wash

At the crushing plant, ore is dumped into a steel receiving hopper below which is a 48" x 14" Bathke pan feeder. Below the feeder and driven by it is a 36" rubber pick up conveyor belt to catch spillage from the pans. The feeder delivers crude to a 5x12' Robbins Gyrex screen with 3" square

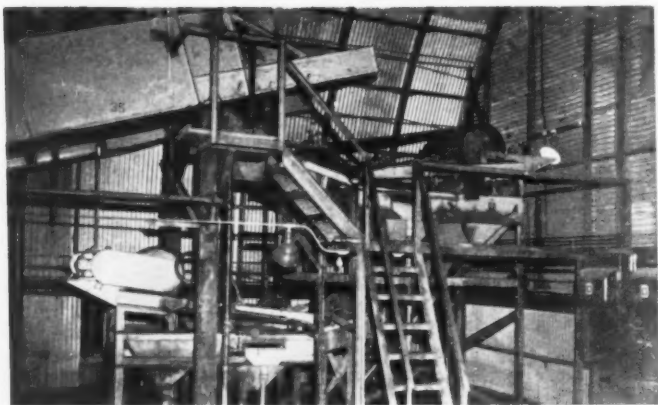
openings. Screen oversize passes over a Dings magnetic apron to remove tramp iron before entering a 32 x 42" Allis-Chalmers Model A-1 jaw crusher, the product of which joins the screen undersize on a 160' long 26" conveyor belt to a surge pile. Because of the slabbing characteristics of the taconite, the jaw crusher is fitted with especially shaped, manganese steel plates. They seem to be highly satisfactory.

The surge pile, which will conveniently hold 5,000 or more tons, is drawn through an earth cone by a 30" by 12' Bathke pan feeder which delivers onto a 26" conveyor belt. Material flow is automatically recorded by a Weightometer as the conveyor raises it to a 5 x 10' Allis-Chalmers,

Left: Fine crushing is accomplished in these two 48" Tel-smith gyrasphere crushers. Material from the stockpile is delivered, by 26" conveyor belt, to the 5 x 10' Allis-Chalmers double-deck Ripl-Flo screen. The top deck has 2" square openings and the bottom $\frac{3}{4}$ " squares. Sprays add water over both decks. Oversize from the top deck is crushed in the coarse concave gyrasphere that is in closed circuit with the screen. Oversize of the bottom screen is crushed to minus $\frac{3}{8}$ " by a single pass in the fine concave gyrasphere. Minus $\frac{3}{8}$ " material is washed before conveying to the treating plant. Right: A 15-ton Euclid with 200-hp. Cummins NHS diesel engine discharges its load of banded taconite to the small receiving hopper at the crusher. A 48" x 14" Bathke pan feeder with a 36" rubber pick-up conveyor belt below delivers ore over a Dings magnetic apron to a 5 x 12' Robbins Gyrex screen. Oversize is reduced in an Allis-Chalmers 32 x 47" Model A-1 jaw crusher with especially designed manganese steel plates.



Top: General view of the Mary Ellen concentrating plant showing most of the prime equipment and the Quonset-type hut that houses the HMS plant. Center: At the mill, crushed ore is received on this 6 x 16' Allis-Chalmers lowhead vibrating 1/16" mesh screen. Screen oversize is treated in the HMS circuit while fines receive two stages of washing in Akins spiral classifiers to make a finished product. The two concentrates are blended for shipment to the blast furnaces. Bottom: Here is the entire medium cleaning circuit except the densifier. Shown is the 36" Akins duplex classifier which thickens the flocculated medium before it is treated by one 36" and one 12" Dings Crockett separators. Both magnetic separators make a final, clean ferrosilicon product that is demagnetized and returned to the circuit via a 36" Akins simplex densifier.



double deck, Ripl-Flo screen. The top screen has 2" square openings and the bottom is 3/4" mesh. There are water sprays over both decks of the screen.

Oversize from the top screen, that is plus 2" material, passes to a 48" Telsmith, coarse concave gyrasphere set at 1". The crushed product discharges onto a 26" conveyor belt for elevation to the belt from the surge pile, thus placing the coarse gyrasphere in closed circuit with the screen.

The minus 2" plus 3/4" oversize from the lower deck of the screen passes to a 48" Telsmith fine concave gyrasphere set at 5/8" which makes a single pass and discharges onto a short 24" cross conveyor. This, in turn, delivers to another 26" conveyor which carries the material to screening at the beneficiation plant.

The minus 3/4" undersize of the lower screen launders to a 78" Akins simplex classifier for washing and dewatering. An 8" Allen Sherman Hoff hydroseal pump carries the overflow to waste while the screw product drops directly onto the 26" conveyor carrying the fine gyrasphere discharge to the treating plant.

Treatment of Fines

Ore, via the conveyor, is received at the treating plant on a 6 x 16' Allis-Chalmers lowhead vibrating screen of 1/8" square mesh. The oversize flows to a heavy-media separation circuit while the fines launder to beneficiation by two stages of washing.

Primary washing of the fines is accomplished in a 66" Akins simplex classifier with the overflow passing, by gravity, to waste and the rake product laundering to another 66" Akins simplex classifier for further treatment. Overflow of the second washer is pumped to the tailings pond and the screw delivers the final concentrate, without conveyor or other means of handling, directly to the concentrate loading bin where it blends with the concentrate from the heavy-media circuit.

Both of the washing classifiers have been modified somewhat for more efficient operation. Lifting bars have been welded between the flights of the spiral to loosen and raise the material as it is carried upwards, and water jets for agitation of the pulp have been installed in each tank. These jets are made of 1" pieces of pipe curved down the side and about half way across the bottom of the tank. The lower section of the pipe is perforated and water may be admitted to retard the settling rate at such times as the nature of the ore requires it. The primary unit is fitted with four jets and the secondary with seven. Their use is rather infrequent.

Treatment by HMS

The heavy-media separation circuit is a very orthodox, smoothly operating unit. The only departure from what is considered more or less

standard practice is the use of a screw classifier instead of a thickener ahead of the magnetic separators in the medium cleaning circuit.

Returning to the washing screen at the head of the mill we find the screen oversize is laundered to a 66" Akins Separator. This machine is fundamentally a large Akins simplex spiral classifier filled with medium having a specific gravity that varies between 3.00 and 3.15. The rake product (concentrate) discharges onto a 6 by 16" Allis-Chalmers low-head vibrating screen with 2mm. openings. From the first one-third of the screen undiluted medium drains to a sump for recirculation, via a 6" Wilfley pump, to the separatory vessel. Spray jets of clear water over the balance of the screen wash the remaining medium into a small, temporary storage tank.



Francis McGinn, office manager.

The cleaned concentrate drops directly into the small bin from which it is loaded through air gates directly into cars for shipment to the blast furnaces.

The float product of the separator overflows onto a 5 by 16" screen of the same type and mesh where drainage and washing of medium are identical. The washed waste material is transported by 24" conveyor belt to a hopper from which it is loaded into cars and sold for railroad ballast or road material.

The medium used is 65-mesh ferrosilicon having an analysis of 85 percent iron and 15 percent silica.

Reclamation of Medium

Diluted and contaminated medium from the last two-thirds of both washing screens is picked up immediately from the small storage tank, which serves to provide a steady head for an Allis-Chalmers materials handling pump, and raised, via a magnetizing coil, which flocculates the ferrosilicon and increases its settling rate, to a 36" Akins duplex classifier which thickens the medium and delivers it to a 36" Dings Crockett magnetic separator. The overflow from the classifier flows to a 25 by 10" Eimco thickener with the thickener underflow being pumped to the same magnetic separator and its overflow becoming wash water for the screen at the head of the treating plant.

The Crockett makes a clean ferro-



This 66" modified Akins simplex classifier is used for the second washing stage in treating the minus 3/16" material in the mill. Note the seven pipes and valves on the right side of the tank. These are water jets in the bottom of the tank that occasionally must be used to help keep sands suspended. In the identical unit used for the primary washing stage, four water jets are employed as required.

silicon product which passes to a 36" Akins simplex densifier. Its tailings pass over a 12" Crockett that also produces a finished product for the densifier and a tailing that flows to the thickener. The densifier serves to control the specific gravity of the medium that is demagnetized and returned to the circuit via the sump and 8" Wilfley pump below the drainage screen.

One marked advantage of this circuit which incorporates spiral classi-

fier thickening of medium ahead of cleaning is that both this classifier and the densifier can be used for medium storage. It also reduces the size of the thickener that would be needed to handle the entire flow of medium washed from the circuit.

The water supply for the crushing and treating plants flows by gravity from a small lake to the mine pit through two 12" lines. The lines are tapped at a point that makes it possible to supply the crushing plant by gravity flow. An 8 by 10" Allis-Chalmers centrifugal pump is used to deliver the water to points of usage in the mill.

From the economic standpoint, the success of handling low grade banded taconite by this method will be determined over the next few months by the ore settlement sheets. From the metallurgical and technical standpoint, however, the success already has been determined by analysis of the product that goes into the concentrate bin versus that going into the tailings pond.

Round Mountain Gold Placer Is Developing

About 75 men are at work installing equipment at Round Mountain Gold Dredging Company's property, Round Mountain, Nevada. Power shovels will be used to mine the gravel and it will be conveyed by belt to the washing plant that is now under construction.

Wells recently drilled in nearby Smokey Valley will supply the water needed for washing gravel. A 55,000-volt transmission line 14 miles long has been constructed.

Yuba Consolidated Gold Fields of California and The Fresno Company hold large interests in the property and production should start by late fall.

The Mary Ellen's maintenance gang: Frank Ulcher; Ludwig Jakel; Steve Kovatovich, master mechanic; John Mohar and Eine Ruotsi.



LOST MINES AND BURIED TREASURES

LOOT OF SKELETON CANYON

Somewhere along the old Spanish trail that runs from Skeleton Canyon through Doubtful Pass and on to Silver City, New Mexico, is a shallow mining shaft containing riches that would be quite astounding to the original owner of the prospect hole were he to return today.

According to the story current in the region, the original prospector found a small stringer of gold ore, but it pinched out before he had gone many feet beneath the surface, so he abandoned the hole. No one knows the location of this shaft today, but it is believed to contain 25 jack-loads of gold and silver bars and several buckskin bags of Spanish coins and jewelry.

The gold and silver bullion was stolen from the mint and smelter and the jewels from the cathedral at Monterrey, Mexico. It is known as the "Monterrey Loot," and for a time was buried in Skeleton Canyon near the little town of Rodeo, New Mexico.

The bandit gang that stole the treasure and buried it was said to have been composed of Jim Hughes, Zwing Hunt, "Doc" Neal, and Red Curley. Hughes was the leader, and he and his men are believed to have been mixed up in the Lincoln County war in which Billy-the-Kid was the central figure.

Forming an alliance with the notorious Estrada gang, Hughes and his partners stole 25 United States Government mules and then crossed the border into Mexico. After a hard ride to the south, they robbed the mint, smelter, and cathedral at Monterrey and returned to United States territory with booty estimated to be worth \$800,000. Bad feeling developed between the Estrada and Hughes gangs, shortly after they returned to Texas, and the feud ended in a gun fight in which the Mexicans were wiped out.

The treasure was buried temporarily in Skeleton Canyon, and Zwing Hunt, who had been wounded in the battle, was left to guard it. Other members of the gang continued their raids on mining camps and stages in Arizona and New Mexico. Their last crime was the cold-blooded murder of a farmer and his son and the theft of their wagon and ox team.

When Hunt recovered from his wounds, they loaded the treasure, which now amounted to well over a million dollars, in the ox cart and headed for Silver City. Two days out

from Skeleton Canyon, a distance estimated at between 40 and 50 miles, the unshod oxen became so crippled from travel over the sharp rocks, they were unable to proceed any farther.

The party, then well along the trail beyond what is now the post office and store known as Red Rock, camped at the foot of a small round hill between two springs which were about a mile apart. Because the wagon had broken down under the heavy load, it was decided to bury the treasure and go ahead on horseback to Silver City. Early the next morning the loot was carried up the hill and thrown into a small mining shaft. The buckskin bags of jewelry and the church plate were thrown in the hole on top of the bullion, and the shaft was filled with loose dirt and rocks from the dump. The oxen were turned loose to shift for themselves, and the wagon was burned. The iron tires from the wagon wheels may still be seen lying at the foot of the little round hill.

The bandits took what money they could carry conveniently in their saddlebags and, upon reaching Silver City, proceeded to spend it freely in the bars and gambling houses of the little frontier mining town. Heavy drinking led to a gunfight in which a young Easterner was killed by one of the bandits, and the entire gang immediately dispersed to the hills, with a posse after them.

Neal was shot and died instantly. Hunt was wounded and taken to Tombstone, where he subsequently escaped and is said to have been killed by the Apache Indians.

Red Curley and Hughes were overtaken and captured at the town of Shakespeare, where they were well known for their depredations. Both were hanged from a rafter in the dining room of the Pioneer House. Curley offered to take his captors to the buried loot if the noose were taken from his neck, but the request was refused—and with his passing none remained who knew the exact location of the treasure-filled mining shaft between Mud and Silver Springs.

Uranium Refinery Will Begin Operating Soon

The Atomic Energy Commission is about to open a plant specifically designed to refine uranium near Hite

Ferry, Utah. Heretofore, all plants in the United States that treated uranium bearing ores were designed to treat vanadium and the flow sheets were revised to recover uranium when it became a strategic metal.

The Vanadium Corporation of America and the United States Vanadium Corporation pioneered the field in conducting research for uranium in the United States, and to these corporations goes credit for providing much of the uranium used in the preliminary experiments that culminated in unlocking the atom.

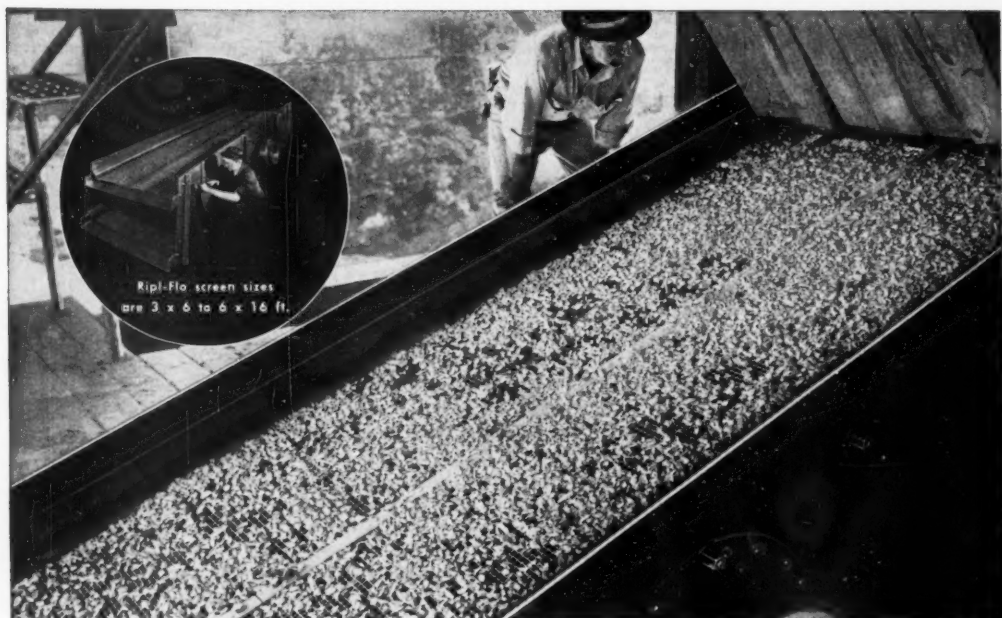
The simple flow sheet that will be utilized in recovering uranium in the new plant is as follows: First the uranium bearing ore is crushed, mixed with ordinary salt and fused in a roaster, after which the fusion is broken up, mixed with hot water for leaching, filtered, and put through a precipitation process to separate the uranium from the vanadium.

Western Mine Owners Will Attempt Greater Unity

A meeting November 6-9 at Reno, Nevada, is planned by representatives of mining companies throughout the western states. W. R. New, president of the Idaho Small Mine Operators and Prospectors' Association, and J. C. Kempvance, operator of the Oro Fino Consolidated Mines, Auburn, California, and director of the California Gold Committee, are drafting a program to organize the miners into a stronger and more unified body.

Policies the group wishes to adopt are the revision of the tax structure to encourage mine development, a revision of the securities and exchange commission to facilitate mine financing and a free market for gold throughout the world. The group also hopes a \$25,000 tax exemption plan can be put into effect, such as the one now used in Canada where taxes are not levied until the original investment is paid back.

The numerically weak major operators combining their advantages of greater contacts and influence with the extensive voting strength of the smaller operators and the men directly and indirectly interested in western mining would add greatly to the strength of demands before Congress.



Screens 150–200 TPH, 10 Hours a Day for 7 Years

CAMPBELL LIMESTONE CO., Liberty, S. C. is mighty pleased with this 5 by 14 ft double deck *Ripl-Flo* vibrating screen installed for sizing granite, one of 8 *Ripl-Flo* screens installed here.

And no wonder! It's been on the job 10 hours a day for seven years, handling 150 tons per hour—sometimes as high as 200 TPH. Maintenance has been extremely low; sizing efficiency has been extremely good.

This case is typical of how *Ripl-Flo* screens have paid off for hundreds of stone plant operators—in long, dependable service . . . in reduced downtime . . . in profitable performance!

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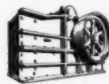
The A-C representative in your area can show you how *Ripl-Flo* screens may help you save big money on your job. Call him today, or write for *Ripl-Flo* screen Bulletin 07B6151B. Allis-Chalmers offices or distributors in principal cities in the U. S. A. and throughout the world.

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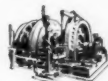
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FOR THE CRUSHING, CEMENT
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ALLIS-CHALMERS

OCTOBER, 1949

[World Mining Section—1]

27

GRAB SAMPLES—From the Mail

Moroccan Manganese

Dear Sir:

In the February 1949 issue of **WORLD MINING**, which I always receive with equal pleasure and interest, I noted on page 54, under the head of "French Morocco," information on the manganese of l'Imini.

I believe that you will find useful the precise information that the deposits of l'Imini as well as the sinterization are not carried out by Soc. Marocaine Minière et Metallurgique as you have erroneously reported but by Soc. Anonyme Chérifienne d'Etudes Minières (Sacem) of which the administrative delegate is Cie, des Minerais de Fer Magnétiques de Mokta-el-Hadid, 60 rue de la Victoire, Paris.

This company was organized in 1929 with a capitalization of three million francs, becoming since then 120 million. Its principal operating companies are: la Compagnie des Minerais de Fer Magnétiques de Mokta-el-Hadid; le Bureau de Recherches et de Participations Minières du Maroc (organized officially by the State and frequently designated by the initials B.R.P.M.) and various other French mining and metallurgical enterprises.

The works of Sidi-Marouf, where sinterization of the manganese is carried out, was built to commence operations in 1940 in the suburbs of Casablanca and is equipped with a Dwight-Lloyd machine.

Besides metallurgical minerals, SACEM produces an important tonnage of chemical minerals.

A. Bouillot
Administrator-Director
Bureau de Recherches et de
Participations Minières
Rabat, Morocco

More on Tin

Dear Sir:

The Company with which I am associated is carrying on tin dredging in Siam, and I am interested in another company also operating in Siam. Recently a copy of your publication **WORLD MINING** for the month of May came before my notice and was found of great interest to myself and my Directors.

W. H. Lack, Secretary
Takuapa Valley Tin
Dredging
Sydney, Australia

Advertisers Not Neglected

Dear Sir:

I take the opportunity to thank you for the copy of **WORLD MINING** that you have been sending to my address at the Mines de Boudoukha, Algeria, North Africa.

I have appreciated the valuable information given in your review that keeps the readers in touch with the recent improvements in milling and mining practice. For that reason I have entered a subscription to the complete **MINING WORLD**.

Our ore is a complex one and our flotation concentrates of copper, zinc and lead must be kept high grade and the recovery improved to maintain profits in the face of declining metal prices.

The copy of the **WORLD MINING** you are sending to the Mines of Boudoukha is

circulated among the staff. Note that even the advertisements are not neglected as we are buying equipment in the United States to modernize our mill and mine.

R. Vieillard, general
manager
Société des Mines de
Boudoukha
16 Rue Le Pelitier
Paris, France

Columbite-Tantalite Development

Dear Sir:

We have read with great interest your issues of the **MINING WORLD** and more especially the July issue received today, and were taken up with the article "India Reports Discovery of Uranium Ore," as discovered by one of our leading geologists. As we are one of the oldest firms in India dealing in the export of mica to foreign countries, (America being our main customer), we have found your issues very interesting, and shall continue to look forward to receiving them regularly, as we consider this to be genuine information.

We have commenced lately a mineral department, and the mines we have at the moment show us to be very rich in columbite-tantalite. These mines lie in the same belt as the uranium, and we have been given to understand that we might by chance touch the uranium vein. We have not commenced the proper mining of the minerals, but have completed the surveying and prospecting and we hope to start the work on a large scale as soon as we can obtain the necessary finance.

L. R. Rowe, manager
The Indian Produce (Mica)
Company
P. O. Box No. 1
Girdih, India

Of International Importance

Dear Sir:

I write to thank you warmly for your courtesy in sending me regular issues of **WORLD MINING**. The excellent content of the world's mineral and mining position that it presents from month to month will do much to restore international balance and equitable readjustment of the disturbed mineral trade of different parts of the world.

D. N. Wadia, M.A., D.Sc.,
F.G.S., F.N.I. geological
advisor
Department of Scientific
Research
Government of India
New Delhi

Valuable Periodical

Dear Sir:

Our opinion of **MINING WORLD** is that this periodical is a very useful and valuable one. Therefore, we intend to enter a second subscription in behalf of our agency in Indonesia for next year. Also, receipt of your **WORLD MINING** is much appreciated.

P. M. v. Bosse
Oost-Borneo Maatschappij
N. V.
Scheveningseweg 50
's-Gravenhage, Netherlands

First School of Mines

Dear Sir:

May I correct the paragraph under the heading of "World Panorama" for April, 1949, concerning the first school of mines in the world.

The school of mines was founded by Mary Therese as Queen of Hungary, its president was the director of the royal treasury, the "count of mines" by title. The seat of the school was Selmechanya (Banska Stavnica in Slovakia near Banska Bistrica, mentioned in your article by error).

This school had the first chair of mineralogy and contributed to this science by the discovery of some fifteen ore minerals. The late professor Bockh was the first to apply the Eotvos torsion-balance to oil prospecting in Transylvania and Persia. It was here that Finkey propounded the basis of the theory of flotation (cf. Gaudin's *Ore Dressing*). The faculty is still one of the most modern in Europe, is still holding step with the progress of American science and technique.

Teaching was suspended twice: in 1848, during the revolution against the German regime when the whole student body enlisted in the national army, and in 1919 for two months after the Versailles treaty when professors, students, equipment and library left by carriage, sled and train for Sopron, Hungary, where it has been functioning ever since.

N. A. de Kun, geological
engineer
Kailo, Maniema
Belgian Congo

Worth Passing On

Dear Sir:

Copies of your very interesting magazine are being sent on to us by a friendly house and we are finding it extremely useful in our business. The undersigned has other interests in mining and your publication has been very helpful to him. We are wondering if you would be good enough to put us on your mailing list.

C. B. Mavalli
Mavalli Machinery &
Minerals Company
14 Girls' School Road
Bangalore City, India

Intensive Coverage

Dear Sir:

I am glad to report that a copy of **WORLD MINING** is being received here regularly.

Naturally it is necessary that we follow world-wide developments affecting the production and use of minerals. We find **WORLD MINING** a convenient condensed gathering together of such information, particularly because of its intensive coverage of developments outside of the United States and Canada.

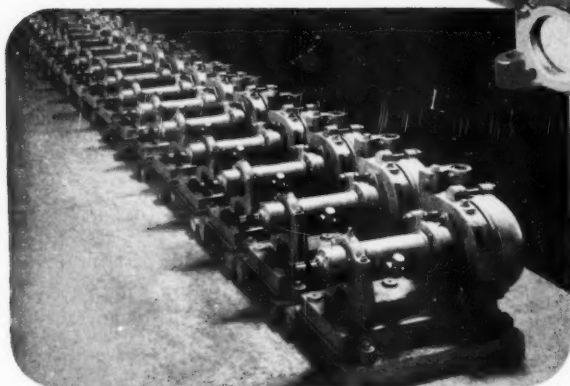
The publication and distribution of this information is performing a useful service.

F. A. Forward, head
Department of Mining and
Metallurgy
The University of British
Columbia, Vancouver

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For handling pulps containing coarse sands, gritty solids, slimes, slurries, and heavy density media, WEMCO Sand Pumps provide high production at low cost. Available in sizes 2", 3", 4", 6" and 8" discharge diameter.

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WORLD MINING

The International Department of MINING WORLD

SAN FRANCISCO, CALIFORNIA

OCTOBER, 1949

INTERNATIONAL PANORAMA

BELGIAN CONGO—Recent reports state that the United States Atomic Energy Commission will attempt to renew the present five-year agreement under which all uranium production, amounting to about 12,000 tons yearly, is purchased.

EGYPT—Pressure by foreign countries to buy mineral products has caused the Quarries and Mines Department of the Egyptian Ministry of Finance to permit the exportation of minerals providing that payment is made in cash. Greece will benefit particularly from the decision as large tonnages of phosphate are needed for Grecian agriculture.

JAMAICA—Permanente Metals, Ltd., a United States company, recently announced plans for the expenditure of \$2,000,000 to construct a bauxite loading pier at Lititz, southwestern Jamaica.

NEW YORK—Lead imports fell to 11,880 tons for July compared to 55,756 tons in June, the result of a rush to market lead in the U. S. before the 1-1/16 cents a pound lead duty was reimposed on June 30, 1949.

WASHINGTON—By revocation of Conservation Order M-81 and U. S. Department of Commerce Basic Tin Conservation Order M-43 restrictions of the use of tin have been removed, effective as of December 1, 1949.

NEW YORK—Zinc advanced one-half cent a pound to 10 1/2 cents, East St. Louis, in early September.

UTAH—Construction of the new \$3,500,000 anode casting plant of the American Smelting & Refining Company has begun at Garfield.

CEYLON—Plans are well advanced for the erection of an ilmenite plant at Fulmoddai, about 40 miles from Trincomalee.

ENGLAND—To be completed by the end of 1952, an £8,000,000 expansion program is underway to build an open hearth steel plant at Middlesbrough. Dorman, Long and Company have the contract.

YUGOSLAVIA—The U. S. government finally has granted an export license to permit the Yugoslav government to import a complete steel mill.

ITALY—Indicating the exclusion of participation by U. S. and British interests, Signor Vanoni, Italian Minister of Finance, has confirmed that the Italian government intends to monopolize mining development, including petroleum products.

BULGARIA—Great activity is reported in the neighborhood of Plakalnitza, Burgas and Panagyurishte by Russian economic geologists in endeavoring to discover extensions of the copper deposits of the areas.

CLEVELAND—Approximately 45,953,000 tons of iron ore had been brought down the Lakes by the end of July, which is nearly 3,000,000 tons more than was carried to this date in 1948. July cargoes approximated 12,768,000 tons.

WASHINGTON—Continuing a downward trend that started in March, domestic mine production of recoverable copper was down 7 percent in July as compared with June, according to the U. S. Bureau of Mines. Production for July totalled 57,034 tons.

INDIA—A move is on to increase Indian steel production by at least 1,000,000 tons a year. The government has retained as consultants for the project the Koppers Company and Arthur G. McGee & Company of the U. S., and the International Construction Company of Great Britain.

NEW YORK—Although a slight rise in sales continues, demand for copper is said to have reached the point where balance with curtailed domestic and foreign supply has been reached.

SANTIAGO—To prevent a happening like that which took place in Bolivia some weeks ago, the Chilean government ordered armed forces to take over mine areas as action against what was said to be a Communist revolutionary plot and Communists are being arrested in mining camps throughout the country.

NEW YORK—The first change in the official price of silver since February took place on August 23 when an advance of one-half cent raised the price to 72 cents.

INDIA—Engaged in the establishment of a fertilizer plant in Bihar are the Power Gas Corporation of Great Britain and the Chemical Construction Company of the U. S.

WASHINGTON—On September 8 the Export-Import Bank granted a loan of \$20,000,000 to Yugoslavia, \$12,000,000 of which will be used to buy equipment and machinery to foment the mining industry.

NEWFOUNDLAND—Premier Smallwood declared that the Labrador Mining and Exploration Company had spent more than \$7,000,000 on the proving of more than 300,000,000 tons of high grade iron ore and that another \$175,000,000 would have to be spent on development before mining would begin.

NEW YORK—Receipt of 6,000 tons of lead and 1,700 tons of copper from Yugoslavia was reported in early September.

SOUTH AFRICA—The coal shortage continues to present a difficult problem to mine operators in both Northern and Southern Rhodesia.

TRANVAAL—Reversal of the falling trend of operations on the Rand, first becoming evident in June, was maintained through July.

Mexican Silver Sales Up; Expanding Market Seen

Sale by Mexico of 38,150,000 oz. of silver for about \$27,277,250 (U. S.) during the first eight months of this year was announced by the Bank of Mexico, Lic. Carlos Novoa, director general. While this export aided Mexico with urgently needed dollars, the sale about exhausted the silver reserve the Bank had built up in recent years by buying most of the silver production from Mexican mines. Saudi Arabia was one of the biggest buyers of this silver.

The Bank, indicating a progressive increase in these exports, reported increased silver production by many Mexican mines in view of the industrial demand for silver in the U. S. and several European countries and the expectation that some Oriental and Near Eastern lands will buy Mexican silver for minting. The Bank controls all silver exports.

Rand Gold Production Begins to Increase

The falling gold production of the Witwatersrand has at last been halted. A somewhat brighter outlook for the gold mining industry was foreshadowed by C. S. McLean, retiring president of the Transvaal Chamber of Mines, in his farewell address recently. He expressed the belief that an increase in the price of gold was approaching and said that the falling trend in Rand gold production had apparently been stopped.

There was, however, no indication as yet that the industry was set for recovery towards its previous highs of activity, the achievement of which would be a long and difficult task. Last year's milled tonnage was 12,000,000 below the 1941 peak, and gold production was 2,780,000 oz. less; the fall had been caused by rising prices and increasing labor shortages. McLean went on to say that he had no doubts that, in the future, the industry would be able to fill its needs of European labor, and, as far as native labor was concerned, the position was much improved since the beginning of the year, partly owing to economic causes, but also as a result of increased efforts by the industry to attract more native labor. Chief among these efforts is the decision to grant a progressive service wage increase after each 270 shifts worked by native laborers.

Confirming McLean's statement,

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SHEAVE BLOCKS

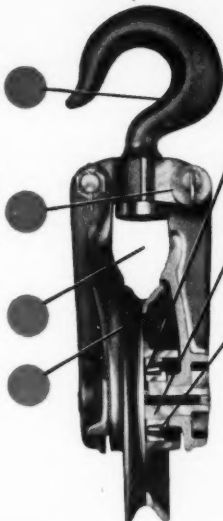


Alloy steel hooks, shackles and yokes assure extra strength with a high factor of safety. Available with safety swivel shackle, hook or standard shackle.

Quick-opening "snatch block" construction provides a fast, simple means of inserting or removing the wire line — no tools are needed. With toggle-pen removed side plate remains in proper position.

Wide throat will pass fittings, splices or square knots in wire line.

Sheave rims are recessed into side plates to prevent rope fouling and to reduce rope wear.



Manganese steel sheave, ideal for the application, provides great strength and resistance to wear — greater sheave life — easier on the wire line.

Manganese steel side plates assure extra strength and long service life — extra protection for wire line.

Heavy duty anti-friction roller bearings provide smooth, free-running sheave operation — sealed to prevent the intrusion of dirt and to retain grease.

Write for **BULLETIN 130**

ALLOY STEEL & METALS CO.

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OCTOBER, 1949

[World Mining Section—5]

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WORLD MINING

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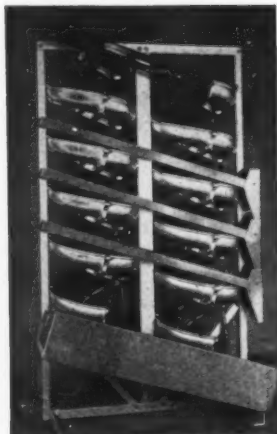
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The Humphreys Investment Co.
909 First National Bank Building
DENVER 2, COLORADO

the Chamber of Mines said the June production was the highest since January, 1946, the rise being evidence of the still-increasing native labor supply.

Large Trade Negotiations Concluded By Germany

Trade agreements have been concluded between Western Germany and France, Great Britain and Norway, by which Germany will receive, during the year beginning July 1, among other items from France and her colonial empire 450,000 tons of iron ore, 200,000 tons cupreous pyrites cinders, 100,000 tons red bauxite, 2,000 tons white bauxite, 650,000 tons crude phosphates, 2,000 tons talc, basic slag, ferro-alloys and graphite, while Germany will deliver barytes, feldspar, china clay and refractory clay, manganiferous iron ore, sodium metal, zinc oxide, titanium oxide and lithopone.

During the same period the Sterling-block countries are to send to Germany iron ore, chrome ore, copper concentrates, copper scrap, nickel, tin, tin alloys, arsenic, vanadium, bismuth, antimony, tungsten, magnesium and manganese ore with a total value of 77,747,000 S/ while Germany will send in exchange steel scrap, lead and other non-ferrous metals with 48,700,000 S/.

Norway is to provide Western Germany with pyrites, ilmenite, pyrites cinders, ferro-alloys, copper concentrates and copper-containing slags, against German deliveries of titanium oxide, steel scrap, lead, lead pigments, aluminum fluoride, lithopone and potash.

Uranium Is Discovered In Northern Territory

The Minister for Supply and Development, Senator Armstrong, has announced that Mr. Crespin, a well-known Northern Territory, Australia, prospector, has revealed that minerals submitted by him to government officials came from the Lone Pine mica mining area in the Harts Range and contain uranium.

As yet, it is too early to assess the economic importance of the discovery, but that the find offers good prospects is apparent. The Lone Pine area has been visited by government geologists and geophysicists, and the report based on their findings is expected to recommend payment of a reward. (A maximum of £25,000 was offered for very rich, easily workable finds.) Examination of geologically similar occurrences in the ranges has revealed the presence of uranium minerals over a wide area. The im-

portant uranium mineral appears to be samarskite, or a closely allied species, with a uranium content of upwards of 20 per cent uranium oxide. A second mineral, with lower uranium content also occurs. The wall rock of the pegmatites, in which these minerals occur, gives high Geiger Muller counts, but the source of the radioactivity has not yet been located. Reports indicated that the stone in which the uranium occurs has been discarded by mica miners for years past.

Norway's Nickel-Copper Output Will Rise

Kristiansand, the only nickel-copper works in Norway and a subsidiary of Falconbridge Nickel Company, is starting a building program to increase its yearly production of nickel by 4,500 tons and of copper by 2,250 tons in late 1951.

Construction of two new buildings is planned, one to house a roasting furnace and the other an anode furnace. New machinery and equipment will be installed throughout the mine.

A smelting plant is now under construction and will be finished at the end of the year except for the electrolytic section, which is being greatly expanded.

Power will be provided by the Iveland Water Power Station development. The station should have one generator in operation this month and will complete expansion in 1952. About 16,000 kw. of power will be needed by the Kristiansand plant.

Employees, who number about 475 now, will total 750 when the plant starts operating.

Japan's Konomai Gold Mine Is Operating

Rehabilitation of the Konomai gold mine, Hokkaido, has progressed more rapidly than expected. (It was reported in WORLD MINING, January, 1949, that the plant was expected to turn over in March, 1950.)

Construction work was largely completed by the end of June and the mill began turning over at one-third capacity. Final construction will be completed in this month, and capacity will be stepped up to the full 400 tons daily. At present, mill heads average 9 grams gold and 180 grams of silver per ton. At full capacity, the mill will produce 80 kilograms of gold and 1,500 kilograms of silver monthly.

Operations during July were devoted largely to eliminating the bugs from the flowsheet and, although much of the machinery has been salvaged from other mines, the plant was working satisfactorily.

**Proof THAT
DENVER TESTING
PAYS CONTINUING
DIVIDENDS**

Cost of crushing was reduced when screening tests showed Denver-Dillon Vibrating Screen would effectively screen out 50% of crusher feed which was already sufficiently fine.

Different reagent combination—and stage addition of reagents throughout flotation circuit not only reduced reagent consumption and cost, but also improved net recovery.

Tests proved how Denver Selective Mineral Jig could recover another mineral from complex ore profitably.

Cost of grinding was reduced when tests showed that by floating a coarser size particle and regrinding the middling particles in Denver Steel Head Ball Mill, recovery was increased and tailing losses due to slimes were lowered substantially.

When mineral characteristics of mine-run ore changed, Denver Laboratory Tests were used to determine most efficient flow-sheet.



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Rosiclare Lead and Fluorspar Mining Company Reports

\$20,000 SAVED IN ONE YEAR



**HOW THIS OPERATOR PROVED
TESTING PAYS!**

The Problem

The problem confronting the Rosiclare Lead and Fluorspar Mining Company of Rosiclare, Illinois, was how to economically recover galena and lead carbonate from ore fractions too fine for treatment in the heavy media plant.

Solution

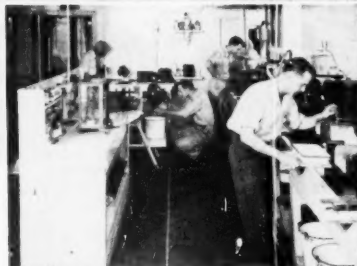
Testing proved lead could be recovered by Denver Selective Mineral Jigs. Two Denver Mineral Jigs (sizes 12"x18" Duplex and 16"x24" Duplex) were recommended and installed.

Result

Cost of entire installation including labor, materials and accessory equipment such as hydraulic classifiers, pumps, steel flooring, piping and all dewatering devices was returned by over 400% in only 11 months' operation.

Rosiclare Lead Reports:

"—With the introduction of Denver Jigs we killed two birds with one stone—(1) we removed the lead prior to recovery of fine sized gravity spar concentrate thus eliminating lead as an undesirable impurity and (2) we recover the lead in a marketable form at low cost."



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Sand Filling Pays Off

Day Mines, by returning tailings to stopes for filling, cuts costs, provides safer working conditions and improves extraction at Dayrock

Geologic Sketch

Geologically, the orebodies are found in the St. Regis quartzite. This is a member of the Belt series of the Algonkian, a pre-Cambrian formation. The veins vary in width from 1.5 to 15'. Mineralization occurs as narrow veins, veinlets and disseminations of silver-bearing galena. Crushing and intimate fracturing are common to the orebodies. Gangue minerals are principally quartz, with pyrite and a small amount of siderite as minor constituents.

Two veins occur in the mine—the Dayrock and the Ohio. These are parallel, spaced about 300' apart. At the time of MINING WORLD's visit, production was coming from the Ohio only. Development work was blocking out ore on the Ohio and was under way on the Dayrock.

Veins are steep but inclined to roll, flattening to 20 degrees, and occasionally the dip will reverse. Many small cross faults also add to the complexity of mining and unraveling the continuity of the orebodies.

As a result of the ground movement the ore is crushed and breaks extremely fine. Some chutes, when ore is drawn from them, run almost like water and a piece of ore as large as a chicken egg is extremely rare.

Mechanization Important

For a small mine the Dayrock is highly mechanized. Four Eimco 12-B mucking machines are in use. Con-

sidering all rock broken—both development and stoped ore—this gives an average of about 80 tons per day per machine. As mucking machines are used principally in development headings, these four machines indicate that little hand mucking is undertaken in the mine.

Six small slusher hoists are employed in the mine—five Ingersoll-Rand A-5-NAOH's and one Sullivan. In the working places, these small machines slush out ore and hoist timber.

All scrapers are built in the company shops and, although light weight and simply constructed, they work satisfactorily and give good service.

Drilling is performed exclusively with Ingersoll-Rand drifters, stopers and jackhammers. Machines are kept in excellent condition, as Day Mines work on the premise that a machine in poor repair is a detriment.

Transportation is taken care of by Mancha battery locomotives exclusively. Nine Mancha Little Trammers are employed on the various levels to gather ore and transport it to the skip pockets and two Mancha ANX Titans do the heavier work of pulling ore trains from underground ore bin to mill bin.

Development and Services

The Dayrock is developed on two levels by adits which are known as the Zero and the 100'. Below the 100' are four levels spaced at 100' inter-

This is the tank that figures as the collector for the tailings. Of wooden construction, it is 14' in diameter and 18' high and is proving a satisfactory installation. About one hour is needed to prepare a batch of tailings and another is used to run it into a stope.

Something new in the Coeur d'Alene district of Idaho is the sand filling of stopes now successfully under way at the Dayrock mine of Day Mines, Inc., operating near Wallace. Although in operation only a short time, the results thus far are gratifying and prove that:

Sand filling offers a safer method of extraction.

Is a much cheaper method of supporting workings than conventional cut and fill.

Reduces the fire hazard by use of less timber.

Permits control of heavy or ravelly walls.

Packs solidly, thereby reducing hazard of flooding.

Permits regular working cycles.

Provides better ground support. Controls ventilation and keeps airways open.

Permits filling of stopes tight to the back.

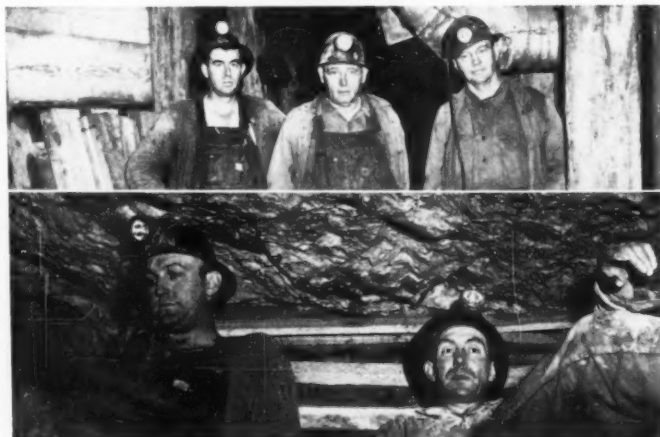
Permits catching up of caved areas and broken ground even though it means filling of existing workings.

The operation is a neat one, entirely self-contained. Situated a short distance above Wallace on the west bank of Ninemile Creek, the mine and mill handle 320 to 350 tons of ore daily. The capacity of the mill has been doubled since mid-November, 1948. Run of mine ore goes about 3.0 oz. silver and 4.5 percent lead. Although 0.5 percent zinc is present, no smelter settlement is received for it, hence it really constitutes a nuisance in the mill.

Operating personnel is made up of Henry L. Day, president and general manager, Rollin Farmin, mine superintendent, and Fred Torkelson, foreman. Operations run along smoothly and the mine is highly mechanized.

As necessary background to the new system of stope filling sketches of the geology, mining and old filling methods are presented.

Top: Progressive supervisory personnel pictured here is Joe Ledbetter, Fred Torkelson and Ray Horsman, shift boss, foreman and chief engineer, respectively, of the Dayrock. Bottom: Two raisemen, Roy Pakestraw and Pete Lanning, taking five while starting a raise from the 800 level Ohio drift.



INTERNATIONAL

vals, the deepest of these being the 500'. Two levels are cut below the 500' at 150' intervals, making the deepest workings 800' below the adit level.

Hoisting is done with a 200 hp. Coeur d'Alene Hardware Company single drum hoist equipped with a 36' drum that winds a $\frac{7}{8}$ " rope. The hoist room is an underground excavation situated about 700' from the portal. The shaft is two compartments, each one being 46 x 48" inside the timber. The other is used as a service compartment and manway. From the collar to the 500' level 8 x 8" timber is used; from the 500' level to the 800', 10 x 10" sets are employed. In the years that this shaft has been in service, no realignment of timber has been needed. The shaft is in excellent condition, and the cage runs almost as smoothly as an elevator.

Skip pockets are cut at each level and skips load directly from pockets by manually operated gates. Average capacity of skip pockets is 150 tons. The pocket on the 500' level, however, has practically double the above-mentioned capacity, as it holds approximately 295 tons.

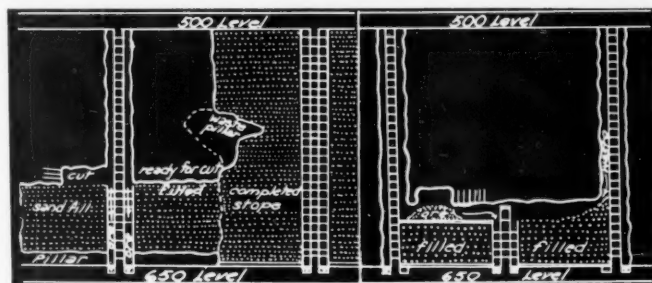
Ample compressed air is supplied for the operation by two Ingersoll-Rand Imperial Type 10 compressors of 75 and 100 hp. installed on the surface and an air-cooled Ingersoll-Rand 90-B 100 hp. machine stands on the 500' level and serves as a booster.

Water does not constitute much of a problem and the pumping plant embraces no unusual practices except at the shaft bottom, where an Ingersoll-Rand jet pump raises the water to the 800' level. Two-stage pumping is installed above the jet pump, one stage lifting from the 800' level to the 500' and the second stage pumping from the 500' to the service adit. Two Ingersoll-Rand 25 hp. pumps lift an average of 25 gpm. from each pump station.

Drifting

Drifting is done on contract entirely. Conventional forged drill steel is used exclusively at Dayrock although most other Day mines employ carbide insert bits. As the ground is exceptionally friable, forged bits give unusually long wear, usually four or five holes per bit. No standard drift round is employed although the number of holes per round averages 26. After a few shifts working on a drill, the ordinary miner can save time and explosives by drilling the round to suit the ground.

Holes are drilled usually to a depth of 7 feet, generally loaded with about one stick of powder to the foot of hole, regardless of the nature of the ground, and fired with conventional fuse and caps. In ordinary Dayrock,



Sketched by Rollin Farmin.

Dayrock mine stoping practices showing (right) conventional horizontal cut and fill using development waste for fill and overhead stoper drilling. Slusher hoist is mounted in central down-pass. Horizontal cut and fill stope (left) using mill tailings for fill. A double stope is worked from a single raise.

ground holes are shot with 40 percent ammonia dynamite; in the tighter ground, 45 percent ammonia dynamite is used.

Rate of advance of timbered drifts is about five feet per eight-hour shift. Rounds are shot at the end of the shift only. To keep crews occupied, more than one heading is advanced ordinarily. This custom permits one crew to keep occupied by working two or more headings in turn.

Broken rock is removed from lateral openings by mucking machines exclusively. These work as much as 20' ahead of the timber. Occasionally, bad ground is met with that prohibits such practice.

Timbering of lateral workings is done with standard eight-foot posts, set with a batter of 1:10, and with standard girts and five-foot lagging. Caps, however, are cut to length.

Raising

One departure from conventional

Milton Estes, motorman, with Titan ANX motor on Dayrock 650 level.



mining methods used at the Dayrock is that of running what are termed two cap raises with joker chutes. These raises are run half raw, that is, a center timbered manway compartment between the two side chutes untimbered on the outside. A square set is put in place in the center of the raise and blocked down. Lagging is put on either side, thus permitting use of the timbered compartment as a man or materials way, while the two side compartments, half raw, are employed as ore chutes. No trouble is experienced in keeping the raises free, and the idea may find application in other mines and other camps.

No standard drilling pattern is used, the custom being to drill the round to fit the ground. The average round contains 28 holes.

Stoping

Before the sand filling was begun, horizontal cut and fill stoping was employed. Drifts were timbered as driven. Connections were made to the level above on 100' intervals by driving two cap raises. After the first two cuts were taken to make working room, the gob was placed directly on the top of the drift timbers, or more recently, placed on a pony set above the drift set. The back was then drilled with stopers, lagging flooring placed to prevent dilution, and the back shot down in consecutive advances. Slushers pulled the ore to the chutes and were used in the working cycle to place the fill run in from the level above. Chutes were placed between the raises, thus making no haul for slushing longer than 50'.

No unusual practice is met with in blasting stope rounds, and the average powder duty for stoping and development is one ton of broken rock for each 0.8 lb. of explosive or 1.25 tons of ore for each pound of explosive.

A practice introduced by mine superintendent Rollin Farmin has to

do with preparing fuses for blasting. After making up a roll of fuse into various lengths, about two inches of the spitting ends are dipped in lacquer. Different colors denote different lengths. That is, eight-foot fuse is dipped in white, ten-foot in yellow, and so on.

The purpose served is largely of a safety nature. Rounds can be loaded with no danger of confusion on the part of the miner as to what length of fuse is in any hole. Another aid is that should an interruption occur, the miner can return with confidence to loading or cutting his round, as no doubt exists as to the length of fuse.

Sand Filling

The sand filling operation now under way at the Dayrock depends on the Dayrock mill as a source of supply. From the 350 ton per day flotation mill is derived the sands that are pumped back into the mine for fill. About 150 tons per day of sands will be returned into the mine workings if needed. This is at the rate of one ton of fill for each two tons of ore delivered. With an assured supply of sand, the planning for filling got under way.

The idea was mine superintendent Farmin's, who had developed the method at Grass Valley, California. Study of the proposal resulted in the decision on the part of the management to install the plant, and it is in operation today.

A feature of the new system is that it permits orderly working cycles, as drilling, breaking, mucking and filling proceed with no hitch in execution.

A radical departure from conventional stoper drilling also has resulted. Prior to sand filling, stopes were back-drilled with stopers. Today the procedure is to drill nearly

horizontal holes about eight feet deep and to shoot them by firing the lowest one first, thus using the force of gravity to aid in breaking the ore.

The ore is broken down onto the sand filling and mucked to the chutes with scrapers. Some tailings dilution results as a consequence of slushing without a lagging floor, but this is more made up for by recovery of fines.

Surface Plant

From the mill the tailings are pumped by a 20 hp. Wilfley pump to the agitator tank for accumulation and dewatering. This tank is a wooden structure standing 600' distant from the mill and 50' above the point where the tailings are picked up. The position of the tank is high enough to permit the flow of the conditioned tailings by gravity to the filling areas in the mine.

The tank is 14' in diameter and 18' high. Tailings, averaging about 25 percent solids, are allowed to settle in the tank while the water overflows until a batch is accumulated.

After the batch has been accumulated and dewatered, it is thoroughly mixed to a pulp of 71-76 percent solids. A 42" impellor, specially constructed, is used for agitation of the tailings. A 25 hp. motor imparts a speed of about 100 rpm. to the impellor, which initially must be freed by a compressor air jet from below.

Provision is made against the possibility of straining the impellor shaft by a bracing collar. This prevents lateral strain and thereby thwarts twisting of the shaft by the action of islands of pulp falling into the shaft when the tank of material is put into motion.

The filling flows by gravity to the stopes. It is conveyed through a 3"

pipe for the entire distance. Victaulic couplings are used throughout and in place of conventional pipe fittings sweeps are used on all corners. No valves or reducers are in the line below the surface. Long life is expected of the pipe, as the slimes in the tailings act as a lubricant. Also, due to viscosity, the slimes prevent high velocity of flow at the pipe walls.

Preparation of Stopes

Mine openings, made up of lateral workings, raises, and filled stopes, are made watertight by using common lagging spiked to uprights. The cracks and all irregularities between ground and the timber are plugged with burlap or paper folded a number of times and held fast by strips of powder box or other light wood. Finely broken waste rock figures largely in making the seal in the Dayrock. Voids in the broken rock apparently fill without any difficulty as the piped-in material seldom or never appears on the sill.

A ventilation box is set at the back end of the stope to be filled. This is a 12 x 12" box prepared from rough timber and raised section by section as the stope is advanced. The joints between sections are sealed with the same materials as are used in other joints and holes in preparing a stope for filling.

The conditioned tailings are composed of about 71 to 76 percent solids as they are deposited in the stopes. Filling begins at the far end of the stope and retreats toward the chute. As the water accumulates in front of the chute it is bled off through auger holes in a wooden standpipe, these holes being covered with burlap when the fill rises and begins to flow through them. The finished fill in any run has an angle of repose of about five percent, sloping from the back end of the stope to the chute.

After waiting part of a shift to permit the fill to set, no difficulty is experienced in setting up a machine for drilling and usually a round is blasted onto the new fill at the end of the shift in which it was poured. About one hour is used in preparing the mix and one hour is used in running it into the stope.

Conclusions

To form an opinion from the data available now, the new system of stope filling is entirely successful. The principal advantages are that it offers a safer and cheaper form of filling and permits more regular cycles of breaking mucking and filling. Still in the beginning stage, the method must be developed further and will benefit from refinement. The outcome of this pioneering on the part of Day Mines, Inc., is being watched carefully by nearly every other operator in the Coeur d'Alenes.

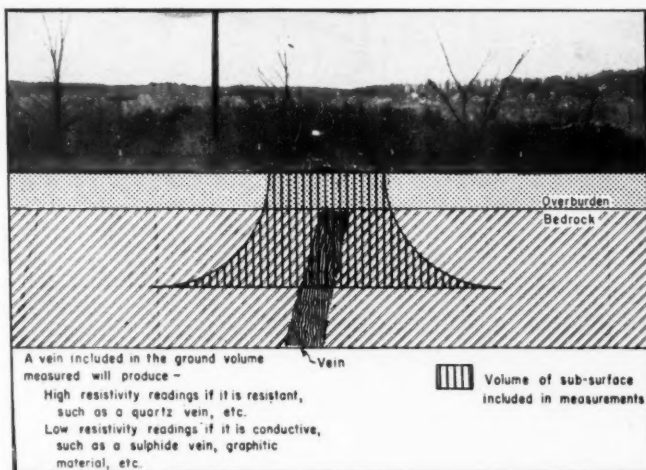
Hans Ehret operating one of the nine Mancha Little Trammers used in the mine on the Dayrock 500 station. Ehret is of a race of men—prospectors—that is becoming extinct rapidly. For nearly half a century he has ranged the hills of the Northwest during the open season, working during the winter, as he is pictured here, to acquire money for the next season.



Principle of electrical resistivity measurements to constant depth of which this is Fig. 5 of the text.

By Sherwin F. Kelly

Sherwin F. Kelly Geophysical Services, Inc.
Wilmington, Del., and
Toronto, Ontario, Canada.



GEOPHYSICAL AND GEOLOGICAL APPROACH TO MINING PROBLEMS

Part I

The somewhat frequently used title of this paper has been deliberately chosen to high-light the essential unit of these earth sciences. Geology means the science of the earth; geophysics means the physics of the earth. The geological processes whereby the face of the earth is molded, are always physical (or physicochemical), and the physical forces acting upon and within the earth have their origin and their consummation in those geological formations, exterior and interior, which compose our globe. This is a fact which bears reiteration because still I find mining men who entertain the heresy that geophysics is something distinct and apart from geology, to be judged solely on its ability to find ore, and to be reprimed or condemned accordingly. This attitude is deplorable, and its premises are false.

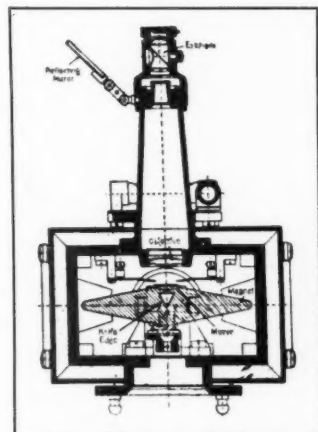
Geophysicists Do Not Find Ore

Bluntly, no bonafide geophysicist ever claims to find ore, and I use the term ore in its technical meaning of mineral which can be extracted at a profit. Any man who claims to discover ore,—lies.

What then is the role geophysics should play in geological exploration, and what can it be expected to accomplish? Every geologist applies

geophysics when he utilizes the physical properties of rocks and minerals, such as specific gravity, lustre, or index of refraction (i.e. effect on light-wave propagation) in his diagnoses of hand specimens. Conversely, every exploration geophysicist, to practice competently, must also be a geologist for he, too, is employing the physical properties of rocks and min-

Fig. 3. Cross section of vertical force magnetometer.



erals, such as specific gravity, magnetic permeability, electrical conductivity, and effect on seismic wave propagation to diagnose hidden geological masses at a distance. This statement brings out an essential difference between the tasks of the geologists and geophysicist—the exploration geophysicist begins where the geologist leaves off, and for the geologist's eyes he substitutes physical instruments.

Physical Properties Important

Being unable to view or feel those bodies he is charged with discovering and delineating, the geophysicist must utilize the more important physical properties of rock and mineral formations to discover and identify them. These properties are: magnetic permeability, the basis of magnetic exploration; electrical conductivity, the basis of various electrical methods of geophysical investigation; specific gravity, upon which the gravitational methods depend; and effect on seismic wave propagation (speed of transmission of earthquake waves), fundamental to the seismic techniques of exploration. In presenting these procedures, I do not intend to go into the details of principles and techniques, but for an adequate comprehension of how geophysical methods are applied,



Courtesy Dominion Observatory, Ottawa, Canada.
Fig. 2. Gravity meter being transported between observation stations on the Canadian Shield.

some understanding is required of the underlying principles. Basically, geological formations possessing appreciable differences in physical characteristics must be present in adequate volume, if distinguishable reactions are to be recorded. This definition contains three ambiguous words,—appreciable, adequate and distinguishable, because exploration geophysics is not an exact science whose premises and conclusions can be set forth with precision by mathematical formulae. It is an art, in which the intellectual integrity, ability and experience of the geophysicists are indispensable; what constitute appreciable differences, adequate volume and distinguishable reactions can only be left to the judgment and integrity of an experienced geophysicist.

Gravitational Method

The most universally experienced physical characteristic of matter, whether it be mineral, vegetable or animal, is mass. The law of gravitational attraction between matter and matter was enunciated long ago by Newton; gravitational attraction varies according to the masses of the bodies involved, and inversely as the square of the distance separating them. From this it follows that at equal distances, denser, more massive rock formations exert a more power-

ful gravitational pull than do the lighter, more porous ones. In other words, a given volume of a dense rock, such as basalt or granite, contains more matter (mass) and exerts a stronger gravitational pull than does an equal volume of such a light formation as sandstone or limestone.

The force of gravity is therefore not uniform from place to place over the face of the earth, but varies with the densities of the subsurface formations. Instruments designed for almost incredible sensitivity, as the torsion balance and gravity meter (Figs. 1 and 2), will put in evidence these minute changes in the force of gravity, from which deductions can be drawn as to the subsurface distribution of light and heavy rock or mineral formations. The differences in specific gravity need not be great, but the greater the spread in density between a rock or mineral body and its adjacent formations, the smaller the body which can be differentiated. Large bodies such as salt domes (specific gravity about 2.2) which differ by only a few tenths from the enclosing sediments (specific gravity about 2.3 to 2.5) are readily outlined by gravitational observations; but much smaller bodies of such heavy ores as sphalerite (sp. g. about 4.0) stibnite (sp. g. =4.5), smithsonite (sp. g. =4.3), anglesite (sp. g. =6.4) or cerussite (sp. g. =6.5), are readily distinguishable from sedimentary or igneous rocks, whose specific gravities lie between 2.0 and 3.0. The criterion whereby to judge if gravitational exploration might apply successfully to a given prospecting problem is, whether or not the formation to be detected or delineated possesses an average specific gravity appreciably different from the surrounding rocks; the larger this difference, the smaller the body which can be discovered.

Magnetic Method

From the preceding discussion of the gravitational technique, it is evident that the method depends solely on the densities of geological formations, and not on their mineralogical character. The situation is otherwise with the magnetic technique, however, which relies entirely on the mineral content of geological bodies. The application of this geophysical method depends on the influence exerted by rock and mineral formations upon the natural magnetic field of the earth. The mineralogical character of a body of rock, and not its density or porosity, controls the effect it will produce upon the earth's magnetic field as the lines of magnetic force traverse it. Any substance which shows the property of decreasing the strength of that magnetic field is called diamagnetic; rock salt,

quartz and calcite, for example, show this characteristic, as do some sedimentary rocks. Substances tending to increase the strength of the earth's magnetic field are known as paramagnetic; the igneous rocks usually fall in this category, and those of basic character are usually more strongly paramagnetic than are the acid ones. Shales and slates sometimes carry magnetite and may, in consequence, be paramagnetic, and therefore readily distinguishable from less paramagnetic, or even diamagnetic beds nearby. Formations high in ferromagnesian minerals, or containing magnetite even in small quantities, are usually paramagnetic. When a substance is capable itself of becoming a magnet, as are magnetite and pyrrhotite, it is described as ferromagnetic.

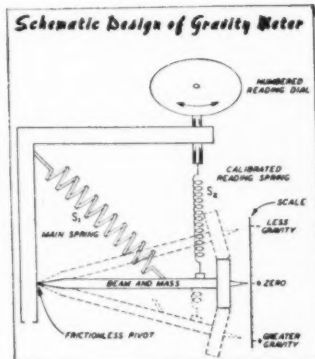
Magnetic Measurements Systematic

The effects of underlying rocks and minerals upon the earth's magnetic field are systematically measured from station to station by means of magnetic needles designed to respond to the intensity of the magnetic field rather than merely to its direction, as does the ordinary compass (Figs. 3 and 4). With a map constructed from the observed variations in magnetic intensity, the geophysicist can then make valuable deductions as to the structures of the underlying rocks, with particular relation to such features as contacts between sedimentary and igneous formations, intrusive dikes, differentiating acid from basic rocks, and locating veins of such magnetic minerals as magnetite or pyrrhotite.

Electrical Prospecting Techniques

The concepts of electricity and magnetism are, to many people, so inextricably associated that not infrequently the mistake is made of as-

Fig. 1. Schematic diagram, showing principle of gravity meter.



This is the first of two parts of the accompanying article. The second part will be published in a forthcoming edition.

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Fig. 4. Magnetometric survey in the Bolivian Andes.

suming an identity between the electrical and magnetic properties of rock and mineral formations. From the point of view of exploration geophysics, however, there is only one technique which makes use of the inter-relationship of electrical and magnetic phenomena. This is the electro-magnetic method, which has only limited application and is seldom used in large scale prospecting.

The property of prime importance in the electrical prospecting techniques, is the resistance that rock and mineral formations present to the flow of an electric current. Their electrical resistance depends not so much on their relative densities, or on their mineral contents, as on their compaction and porosity. The mineral constitution is of only minor importance, except in the case of sulphide minerals, as explained later in this section. The common rock forming minerals, being mostly silicates, are practically nonconductors, yet rocks and soils everywhere, even the sands of the desert, will conduct a current by reason of the moisture invariably present in their pore spaces. The more porous and moist the rock or soil, the better will it conduct a current, whereas compact and dry formations will be resistant. Typical of resistant formations are the igneous intrusives, which are dense, of low porosity and comparatively dry; their resistivities usually lie between 1,000 and 50,000 meter-ohms (This term meter-ohm is a convenient unit with which to express the resistance of a unit volume of ground, called its resistivity. The term signifies the ohms resistance of a cube measuring one meter on each edge). Soil, glacial drift and alluvium

or the other hand, are usually porous and moist, and consequently have low resistivities in the range of ten to a few hundred meter-ohms. Between the intrusives and overburden, lie the sedimentary rocks, with resistivity ranges of 100 to 1,000 meter-ohms, and sometimes higher. Shales are commonly better conductors than limestones or sandstones; the metamorphic rocks, whether originally sedimentary or igneous, are usually found in the highly resistant brackets. Within a lithological type, there are also found variations in resistivity values which are a function of the geological age of the formation, as the older formations are usually more heavily compacted. Bedded and foliated rocks tend to exhibit higher resistances to current flow across the bedding than parallel to it, an important feature in case sedimentary strata are under study.

Relation of Faults

Quartz veins and silicified zones run to even higher resistivities (50,000 meter-ohms and over) than the igneous rocks, an extremely important fact when gold-quartz deposits are the object of search. At the opposite extreme to the quartz veins there lies another set of geological features which are also frequently important to the exploration geologist,—faults, shear zones and gouges. When wet they show remarkably low resistivities, in the range of a few tens to a few hundreds of meter-ohms, but open, dry faults will act as resistant walls to the flow of electric currents.

These differences in electrical resistivity are utilized by the geophysicist to map the occurrence, distribution and contact of formation differing in this parameter from the adjacent or enclosing rocks. An electric current is passed through the ground, and the observations then made of its distribution enable the geophysicist to calculate the resistivities of the subsoil formations (Fig. 5). By a suitable disposition of the contacts through which the current passes to the ground, it is possible to control the depth to which measurements are made. The electrical contacts may thus be disposed in such a manner as to take observations at a given depth over the area to be surveyed, thereby yielding a picture of how resistivities change from place to place within that horizontal slice. Successive slices may be taken to greater depths, to present cross-sections of resistivity variations from the surface down to any predetermined depth.

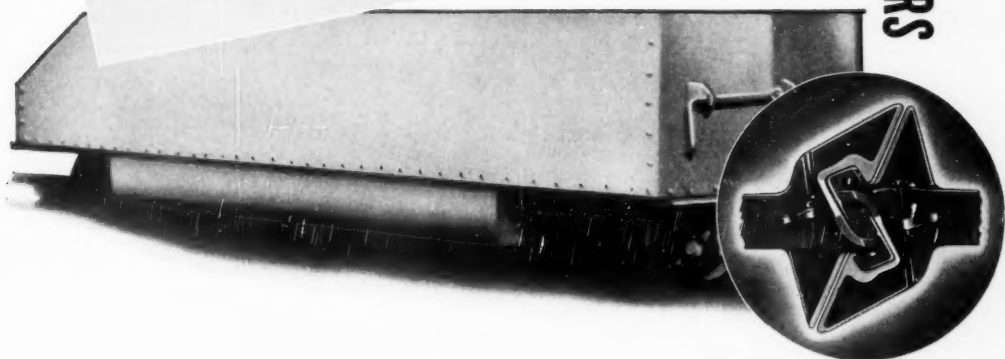
The objective of this field procedure is to reveal vertical or steeply inclined formations, such as shear zones, quartz veins, intrusive bodies and steeply tilted contacts between differing sedimentary formations (Figs. 5 and 7).

Fig. 7. Electrical resistivity equipment on a survey in the Peruvian Andes.



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THE PYRITE INDUSTRY OF BIZONIA AND ITS PLACE IN THE WEST GERMAN ECONOMY

Pyrite is one of the most important raw materials for the production of sulphuric and sulphurous acid, which especially applies to Germany, where the bulk of all the sulphuric and sulphurous acid produced is derived from pyrites. Sulphuric acid is one of the basic raw materials for the fertilizer and chemical industries, while sulphurous acid is chiefly used by pulp and paper mills. The chemical, fertilizer and cellulose industries represent a considerable part of the total industrial activity in Bizonia, adequate supplies of pyrites thus being of utmost importance.

Pyrites deposits exist in Bizonia in the area of Meggen in southern Westphalia and at Pfaffenreuth in Bavaria, the Meggen mine being by far the most important one. Operations at the Meggen mine began about 1850. Before the erection of railway lines facilitated a rapid increase of output at Meggen, only moderate amounts of pyrites were produced from this mine during the first years of operation. Originally, the mine was British-owned, but it was taken over by German interests in 1872.

Considering conditions generally prevailing in the German mining industry, Meggen is a large deposit, extending several miles in length and width. The central parts of the deposits chiefly contain pyrites, while barytes predominate in the border zone. Transition from pyrites to barytes is gradual, but the nature of the intermixed ores is not so complex as to present serious obstacles to a separate production of pyrites and barytes.

The pyrites of Meggen differ from all other pyrites by their comparatively high content of zinc-blende. An average analysis of Meggen pyrites is about as follows:

Sulphur	38-42 %
Zinc	7-8 %
Iron	32-35 %
Arsenic	0.06-0.08%
Copper	0.01-0.02%
Manganese	0.15-0.3 %
Lead	0.1 -0.4 %
Cobalt and nickel.....	0.02-0.03%
Lime	1.4 -1.5 %

TABLE I
Pyrites Supplies of Bizonia

	1947	1948
	Metric tons	
Production	320,000	384,700
Imports	252,100	461,900
Total supplies	572,100	846,600

Magnesia	0.7 -0.8 %
Carbondioxide	1.8 -1.9 %
Phosphoric acid	Traces
Rare metals (thallium, indium) and gangue..	8-9 %

The bulk of the pyrites mined has to pass crushing and concentrating plants, while a minor part of the pyrites is treated by a flotation plant, where zinc-blende is separated from pyrites, but the total through-put of this plant has so far been insignificant in comparison to total output.

Prior to World War I, between 100,000 and 200,000 tons of pyrites were raised annually at Meggen. During World War I production soared to nearly 800,000 tons, but was reduced to a range between 200,000 and 300,000 tons after the end of the war. During World War II the output zoomed once more, reaching a height of 1,000,000 tons, but decreased again after the termination of hostilities. At present the mine is working at an annual rate of about 300,000 tons.

The economic utilization of the Meggen pyrites involves, besides the use of the sulphur contained therein, an extraction of the iron and zinc content. After nearly all the sulphur has been removed by the ordinary roasting process for the production of sulphuric or sulphurous acid, the

residues are mainly composed of iron, zinc and a few percent sulphur. Only after elimination of the sulphur and zinc content can the residues be used as iron ore in the blast furnaces. In order to remove the remaining sulphur content completely, the residues are submitted to a special roasting process, the so-called chlorinating roasting process. By this process, zinc is extracted either in the form of a solution by leaching or as zinc oxide. The extraction of zinc in a dissolved form is applied, if the zinc content of the residues is to be used for the production of lithopone. But only a part of the Meggen residues are employed for this purpose. The balance of the residues is treated together with residues of cuprous pyrites of foreign origin by special plants. The zinc content is extracted, as mentioned above, in the form of zinc oxide, used either as a pigment or as a raw material for the production of metallic zinc. The Meggen deposit is exploited by "Sachtleben" AG, fur Bergbau und chemische Industrie, Koln, which, besides pyrites, is raising barytes and operating a number of lithopone plants. This company has also erected, as mentioned above, a flotation plant, where pyrites and zinc-blende concentrates are produced. Furthermore, a special pig iron and zinc oxide are produced by this company according to a special process.

The other pyrites mine in Bizonia at Pfaffenreuth (Bavaria) is of minor significance, annual output running at between 30,000 to 40,000 tons of pyrites with a low copper content and 42 percent sulphur. The analysis of this pyrite is as follows:

Sulphur	39.41-44.45%
Iron	33.49-38.87%
Copper	0.76- 2.15%
Zinc	4.29- 6.75%
Lead	0.80- 1.73%
Arsenic	0.11- 0.24%

The pyrites mined at Pfaffenreuth are not very different from those

Continued on Page 46

TABLE II
Imports of Pyrites Into Bizonia According to Countries of Origin

	1947	1948
	Metric tons	
Spain	187,710	213,276
Norway	64,404	181,442
Cyprus		39,529
Greece		18,797
Sweden		6,112
Italy		1,444
Netherlands		1,240
Switzerland		34
Total imports	252,114	461,874

TABLE III
Imports of Pyrites Cinders Into Bizonia in 1948

	Metric tons
Belgium	190,294
Denmark	28,827
France	19,072
Netherlands	153,648
Sweden	77,771
Switzerland	8,748
Spain	9,899
French Morocco	1,327
Total	489,586

TABLE IV
Products Derived From Pyrites Residues in 1948

	Metric tons
Pig iron.....About	400,000
Copper (containing precious metals)	6,500
Sodium sulphate	60-70,000
Lithopone	18-20,000
Zinc oxide	16,000
Lead	1,000
Cobalt	80-90

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NEW AIR-POWERED LOCOMOTIVES PROMISE TO REDUCE TRAMMING AND HAULAGE COSTS

Considerable interest is being aroused in mining circles by a recently developed air-powered locomotive now on the market that is manufactured by Universal Dredge Manufacturing Company. The following report relates briefly how the air trammer was designed to fill a gap in underground haulage methods and how well it is succeeding.

Since the beginning of underground mining the mine operator had been faced with the bottleneck of material haulage. Progress in this field of mining has lagged well behind developments in other phases of the mining industry. The small operator, who by virtue of the size of his operation could not afford the cost of mechanized tramming, has had to rely entirely on manual or horse tramming. Likewise the large operator was faced with the problem of providing an efficient method of tramming cars from the various short entries to the main haulage tunnel. He also was often forced to rely on manual or horse tramming for this task.

In the absence of efficient, inexpensive and low maintenance equipment to serve this purpose, the age-old methods of hand and mule tramming still exist. To solve these problems, the Universal Dredge

Manufacturing Company undertook to produce a trammer to fit the requirements of the miscellaneous tramming operations. Four important features were considered: First, to produce a trammer which would require no overhead trolley; second, consideration was given to mine requirements in remote areas where electric power was not available as a primary power or for recharging; third, the elimination of motive power where gas or other fumes were present was needed in order that the trammer might be used in poorly ventilated areas; and fourth, to produce a trammer not requiring special features such as high pressure air, charging equipment or other special sources of power.

Considering these features, the use of compressed air from the mine air-line as used for drills, mucking machines and other air tools, was considered the most logical source of power. A test unit was built and tested under actual operating conditions. During a year of experimentation, many improvements were made. From information obtained by the testing of the original equipment, a new and improved unit was designed and constructed, resulting in increased travel distance and draw-bar pull.

In general, the Universal Air Trammers consist of a storage receiver, an engine and chassis. There are two principal models. The Tramaire is a self-contained unit having the engine and tank on a single chassis. This model is manufactured in various sizes and combinations with receivers ranging from 30" x 7" to 30" x 8' 2". This model is likewise equipped with a choice of different power units; a 4½ h.p., 6 h.p., or 10 h.p. The range for which these are best adapted varies from 600' to 1,800', hauling from two to eight one-ton cars or the equivalent thereof. Travel distances and loads in excess of the above have been reached where conditions were favorable.

The principal use of the Tramaire is for short haulage work and light loads. In the larger mines, it is particularly well adapted for short entry haulage to the main shaft or main haulage tunnel. Time required for recharging a tank, of course, depends on the size and capacity of the air line, air available, and other items, and in the majority of cases will take less than one minute for a complete charge. By actual operation it has been found that this time delay in recharging has proven insignificant, as in many cases the tram is stopped for five to ten-minute intervals while cars are loaded at the chutes. Thus, no delay is encountered in recharging.

With the excellent reports received from the various operators of the Tramaire unit, it was considered advisable to produce a larger unit suitable for longer hauls and greater loads. However, the limitation of tank size on the single chassis offered a considerable problem. A special unit was designed and constructed whereby the power unit was a separate piece of equipment and the tank was built in the form of a semi-trailer and attached to the power unit. In this manner, tanks up to 48" diameter by nine feet long could be used. A larger engine was furnished with the tramster, thus obtaining greater draw-bar pull which, together with a larger tank, enabled this unit to haul from six to eight cars up to 3,000' or more.

In general, we will outline a few of the many very successful Universal Air Trammers which are now operating in the field. Lesars of the Cresson Consolidated Mines at Cripple Creek, Colorado, are now operating seven units in the Cresson.

Continued on Page 46

A Universal Dredge Manufacturing Company Air Trammer at work in a western mine. This is a specially constructed unit with the air tank carried on a separate truck as a semi-trailer, thus permitting the use of a larger tank permitting greater draw-bar pull and longer runs between charges.





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PIONEER PRODUCERS OF XANTHATES FOR METALLURGICAL USE

Bizonia Pyrite*Continued from Page 42*

raised at Meggen as regards their rather high zinc content. The utilization of the cinders, therefore, raises no special problems. Pyrites supplies to Bizonia, as derived from home production and imports, are shown by Table I. The table reveals that more than 50 percent of Bizonia's pyrites requirements had to be imported during recent years. Table II shows the distribution of imports according to countries of origin. Also before the war, considerable amounts of foreign pyrites were consumed in addition to the domestic output. Imports reached as much as 1,000,000 tons a year. In order to utilize the cinders remaining after the pyrites have been roasted, i.e., to convert them into an iron ore fit for immediate use in a blast furnace, special plants have been erected. The existence of such plants in Germany induced numerous foreign countries to send their pyrites cinders to German plants for further treatment. Up until the beginning of World War II, these plants produced about 10,000 tons copper containing precious metals, 15-20,000 tons zinc in the form of zinc oxide and 500-600,000 tons iron in agglomerated form or as purple ore. In addition, minor amounts of lead, cobalt and of some rare metals were produced. Of three plants existing at the outbreak of war, two are working now, one at Duisburg and one at Luebeck. By far the most important plant is that one situated at Duisburg. The bulk of pyrites residues produced in Germany from home and foreign pyrites is treated by these plants, while only a part of the Meggen pyrites residues is used for the production of lithopone. In addition, a considerable amount of pyrites cinders is again imported from foreign countries and treated by these plants. Table III gives an approximate survey of imports of pyrites residues in 1948, while Table IV shows the importance of this industry by revealing which products were derived from the residues treated. The production and use of pyrites in connection with the utilization of the residues left over after the pyrites have been roasted has a significance for the industrial activity and the whole economic structure of Bizonia which should not be underestimated.

Air-Powered Locomotives*Continued from Page 44*

One of the leasers reports that after purchasing a small Universal Trammere he increased his production from 10 cars per day to 47. This particular haul involved the moving of five one-ton cars on a 3 percent grade for 900' on very irregular track which

had a number of curves and one switch. The haul was from the main shaft through a very narrow entry to the ore chute. The tank was charged at the shaft and again at the ore chute. While it was possible to make the round trip which was approximately 1,800' with one charge of air, it was deemed advisable for speedy handling to recharge at the chute. Other operators in the Cresson have reported equal success with their units.

A number of similar Universal Air Trammers are now in operation in the Coeur d'Alene area of Idaho. Many larger companies are using them for short entry haulage and hauling backfill. An example of a Universal Trammere being operated with a great deal of success under very adverse conditions is that of the B.R.X. Mines in British Columbia, where a narrow entry, irregular track, and a number of sharp curves do not prevent the machine from doing a highly satisfactory job. One Trammere unit at the Bunker Hill and Sullivan Mining and Concentrating Company's property at Kellogg, has been in operation about four months, tramping waste fill in a square-set stope. It has been used in runs of from 35 to 135' on both straight tracks and around 90-degree corners. Thus

far it is estimated that one man and the machine will handle about three times the average amount of muck that was obtained with hand tramping. Total length of run between charging with air at 85 lbs. is between 1,200 and 1,300' and it is thought that maintenance charges will be negligible.

From limited experience with the Trammere it is thought that the machine has a place where loads are light and the runs short where a more expensive trammer is not justified.

A second Trammere has been purchased by Bunker Hill, and it already is in operation.

From constant observation of the operation of these units in the various mining districts, it is believed that the Air Trammere will operate for three to five years without repairs, requiring only the normal maintenance such as greasing and clean-up work.

Engineers of the Universal Dredge Manufacturing Company are constantly developing and improving these units. A number of patent applications were made on both the Trammere and the Trammaster. Dealers are being established in all the large mining districts to serve the mining industry.

NEW PITCHBLEND DISCOVERY AT NISTO MINES SHOWS PROMISE OF IMPORTANT DEVELOPMENTS

Preliminary surface work on the Black Lake property of Nisto Mines, Ltd., in Saskatchewan, Canada, has provided important results in a remarkably short time. The crew, flown to the property early in May, has already reported 11 zones and an additional series of cross fractures in which either visible pitchblende or high Geiger reactions have been noted.

Zone No. 1 has been stripped and trenched for a length of 500 feet, with the southwest end still open, but work is hampered in that direction by deep overburden. Visible and massive pitchblende occurs in narrow seams in the gneiss and along the contacts of numerous intrusive dykes. Widths vary from thin films up to massive pitchblende over a width of half an inch. The occurrences are found over a width of 50 feet along the zone.

Zone No. 2 has been exposed in two pits, 240 feet apart. Zone No. 3 is currently being trenched, having been traced by Geiger reaction for a length in excess of 200 feet.

Zone No. 4 is being trenched over a length of 230 feet, with visible pitchblende showing at both ends.

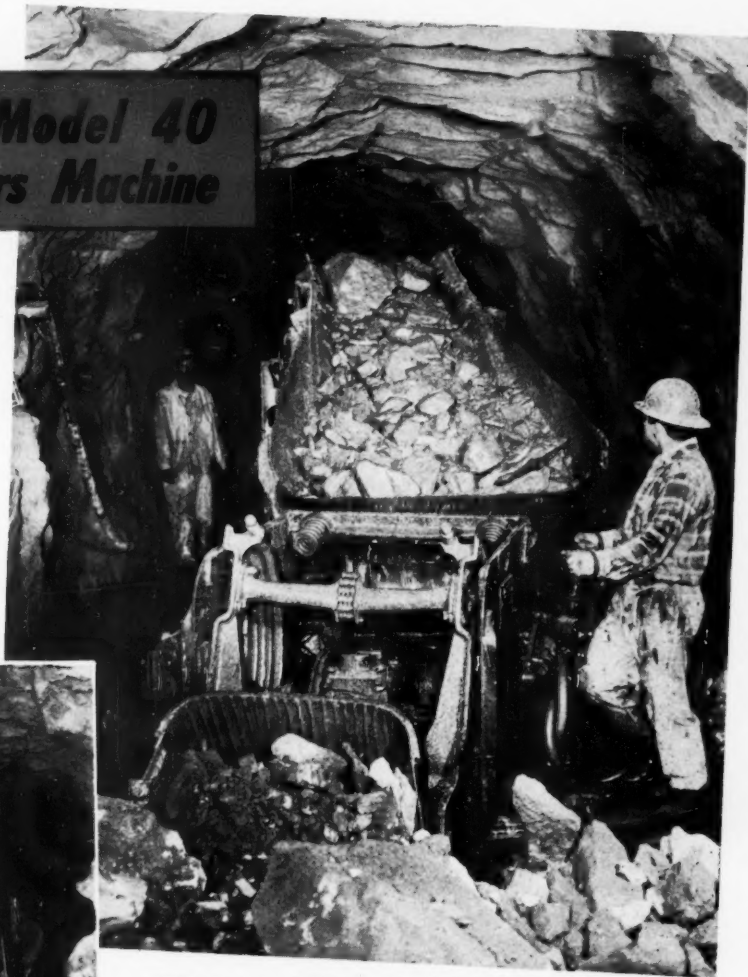
Zone No. 5 is being trenched over a length of 100 feet, with visible pitchblende in the central section. Zone No. 6 has been traced by Geiger reaction for a distance of 250 feet and is to be trenched immediately. Zone No. 7 has been traced for a length of 550 feet and still remains to be trenched.

In addition to the series of zones already located and on which work is continuing, a system of cross fractures has been uncovered, showing massive pitchblende in narrow seams. These have been weathered badly and require blasting to expose fresh unleached surfaces.

In addition to the results mentioned above, two entirely new surface occurrences have been discovered by the prospecting crews. Both of these show massive pitchblende and are being trenched.

Diamond drilling is under way, with Hole No. 1 giving Geiger reactions at 25 ft. and 105 ft., but with no visible pitchblende. Hole No. 2 is completed, but results have not been reported to date. Hole No. 3 is currently drilling, with one good intersection reported, but with details lacking.

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ABOVE: An Eastern Contractor speeds his tunnel job to completion with a Model 40 Eimco RockerShovel. LEFT: Full belts of muck load the cars quickly. LEFT BELOW: The Eimco Model 40 RockerShovel.

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PROMINENT MEN IN INTERNATIONAL MINING

Henry G. Schuring is now mill superintendent for New Idria Honduras Mining Company, Santa Rosa de Copan, Honduras. He had been with La Luz Mines, Ltd., at Siuna, Nicaragua.

Robert J. Rose is now working for the Messina Development Company, Messina, Transvaal, Union of South Africa.

Clarence O. Mittendorf is in Ankara, Turkey, c/o the American Embassy, on an ECA mission. He has been in government mining positions for several years.

John M. Tufts, Jr., can be reached at 7 Avenida Sur No. 97, Guatemala, C. A., where he is mining engineer for Cia. Centro Americana de Minas, S. A.

Werner O. Joseph is assistant mill



MACK C. LAKE, prominent mining engineer and geologist, has been appointed consulting engineer for Oliver Iron Mining Company, Duluth, Minnesota, and other U. S. Steel Corporation subsidiaries and will deal largely with the company's ore developments in foreign fields.

foreman of Cia. Minera Punitaqui at Ovalle, Chile.

Emerson C. Lane is metallurgist for the New York and Honduras Rosario Mining Company, San Juancito, Honduras.

F. Stuart Miller is assistant manager for the Pacific Tin Consolidated Corporation at Kuala Lumpur, Malaya.

G. Dessau is mining engineer with the Geological Survey of Italy, which is a division of the Italian Colonial Administration. He had been in a similar position in India shortly after the war.

J. L. McCluggage, until recently mining engineer for Rawang Tin Fields, Ltd., is now mining engineer for Kamunting Tin Dredging Company at Taiping, Perak, Malaya.

Dr. T. A. Rickard was recently appointed an honorary fellow of the Imperial College of Sciences at Victoria, British Columbia.

L. J. Barraclough has been elected president of the Mining, Geological and Metallurgical Institute of India. His present address is Disergarh Post

Office, Burdwan District, West Bengal, India.

Wilson D. Michell has a position as resident chief geologist for the Resurrection Mining Company at Leadville, Colorado. Previously he had been geologist for the Societe Nord-Africaine du Plomb for two years in French Morocco exploring and developing lead-zinc deposits there.

John C. Roehm has been re-appointed associate mining engineer for the Territorial Department of Mines, Fairbanks, Alaska. He takes over for Bruce I. Thomas, who resigned to manage the Brinker-Johnson dredging operation on Caribou Creek, Salcha district. Roehm has had about 12 years of service with the department and has covered a considerable part of Alaska in his many field investigations, making him well acquainted with and well suited to the job. He advises that a special study of the pre-Cambrian area of Alaska is about to be undertaken by the Department.

Bernard Beringer has accepted a position as mine manager of Palmiet Chrome Mines, Ltd., P. O. Matooster, Rustenburg, Transvaal, South Africa.

Charles W. Campbell is shift boss with the production department of Mina Tiro General, Charcas, S. L. P., Mexico.

J. R. Sweet has left the employ of the Roan Antelope Copper Mines, Ltd., Luanshya, Northern Rhodesia, where he was for over four years, and has become general manager for Tungsten Mining Corporation, Henderson, North Carolina.

Luis Espinosa de Leon, chief of the ore testing department of the Mexican government's metallurgical laboratory at Tecamachalco, D. F., was awarded the United States government scholarship for a training course with the U. S. Bureau of Mines. He will study with the Bureau at Salt Lake City, Utah, and when finished will return to his job with the National Commission for Stimulation of the Mining Industry. Espinosa de Leon was educated at the National University of Mexico, Mexico City.

K. Milnes succeeds G. Beattie as a director for Whippet Gold Mine, N. L., Australia.

H. D. Kelly, formerly assistant manager of Cuthberts Misima Gold Mine, Ltd., Papua, has been promoted to general manager.

W. A. Van der Hoff of the United States firm, Ore Trading Company,

has arrived in the Union of South Africa on a twelve months' contract in connection with mechanization and production boosting in the Postmasberg manganese field, northwest Cape Province.

Sir Clive Ballieu has resigned from the boards of Zinc Corporation, Ltd.; Imperial Smelting Corporation, and New Broken Hill Consolidated, Ltd., Australia.

S. Haymes, manager of British Guiana Consolidated Goldfields, Ltd., has resigned to become manager of Axel Johnson and Co., Inc.'s, operations in the northwest of British Guiana.

K. Richardson has been elected to succeed C. S. McLean as president of the Transvaal Chamber of Mines for the next twelve months.

J. Stewart Hay was appointed to succeed F. Maskew as manager of East Geduld Mines, Ltd., on the latter's retirement last month. Hay is at present manager of Marievale Consolidated Mines, Ltd., and his place there will be taken by J. Goode of Union Corporation's head office in Johannesburg. Both East Geduld and Marievale are members of the Union Corporation group.

James G. McCrea, general manager of Dome Exploration, Ltd., Ontario, has been elected president of the Canadian Metal Mining Association.

R. J. Wyso, Charlotte, North Carolina, a former president of Republic Steel Corporation, is now a consultant with E.C.A. and is making a survey of Greece to determine its steel requirements and resources.

Lew Adamec, at one time level foreman for the Braden Copper Company, Rancagua, Chile, is section superintendent now for Cie. Aramayo de Mines en Bolivie, Casilla 674, La Paz, Bolivia.

D. L. Anderson is in Managua, Nicaragua, in the employ of Empresa Minera de Nicaragua.

J. Nixon Bewsher, consulting engineer of London, England, who recently returned from an extended tour in the Far East, is now in Canada advising on and directing the design and construction of new metallurgical plants. His address is P. O. Box 173, Cobalt, Ontario.

A. GORDON IRVING

was appointed general superintendent of Hollinger Consolidated Gold Mines Ltd., Timmins, Ontario, moving up from his positions as mine engineer and manager of outside properties, although he will retain some of the duties of the latter.



Amsco-nagle

MATERIALS HANDLING

Pumps

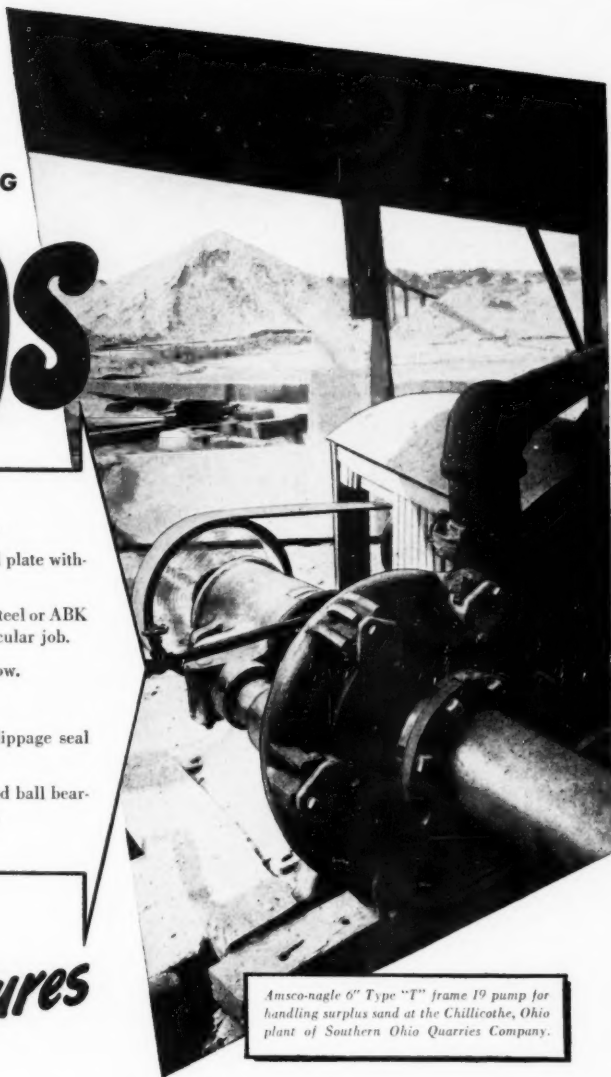
1. Simple design—only three wearing parts.
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forming with satisfaction where other pumps have failed.

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AFRICA

ORANGE FREE STATE—Gold fields in the Free State are increasing considerably in size and productivity through the results of recent exploration. According to C. S. McLean, president of the Transvaal Chamber of Mines, the following companies are doing a large amount of development work: "St. Helena Goldmines has started underground development work preparatory to production. The Welkom Gold Mining Company is sinking two shafts and anticipates being in production at the rate of 50,000 tons a month early in 1957. Western Holdings is sinking two shafts and expects to reach the production stage in the middle of 1952. Freestate Geduld Mines, which is also sinking two shafts, expects to reach production at the end of 1952. Two shafts are being sunk on the Freddie North Lease Area and two on Freddie South Lease Area, each of which are anticipated to be down to reef in 1951. President Steyn Gold Mining Company is also sinking two shafts with a view to production in 1953 and the President Brand Gold Mining Company is drilling preparatory to the start of shaft sinking." Meantime a possibility of a rich strike in the Hoopstad district on the Spes Bona Farm is reported by General Exploration Orange Free State Ltd. The gold was found at deep levels in reefs in widths sufficient to offset the added expense of deep mining.

SOUTH AFRICA—The first ship-

ment of lead concentrates from the rich Usakos mine left Walvis Bay in August. The mine is remarkable in that it now produces more lead per month than the entire South African output in 1948 (223 tons). The Usakos lode averages 25' wide and extends four miles. Before World War I the claims were worked by Germans and were never properly evaluated due to the low metal prices and the unsettled condition of the country at that time.

FRENCH MOROCCO—Manganese output at the *Imini* and *Tiouine* mines totaled 140,000 tons in 1948 with a goal of 210,000 set for 1949 and 370,000 or more by 1952. Of this amount 250,000 tons will be mined in *Imini* and 120,000 tons in *Tiouine*, for approximately two-thirds of French consumption.

ORANGE FREE STATE—At the height of the excitement resulting from the recent phenomenal 56,000" dwt. gold strike in the Free State, an announcement of an alleged discovery of even higher value in a borehole on the farm *Dankbaarheid*, located in the Ventersburg district of the Free State, was supplied to the South African Press Association and published by them. *Dankbaarheid* prices immediately soared, but later a denial of the report was published by the company concerned, and prices slumped. The Union Government, perturbed by these conflicting reports, appointed a commission of inquiry into the affair under R. H. A. Van Rooyen, one of the Rand's chief magistrates.

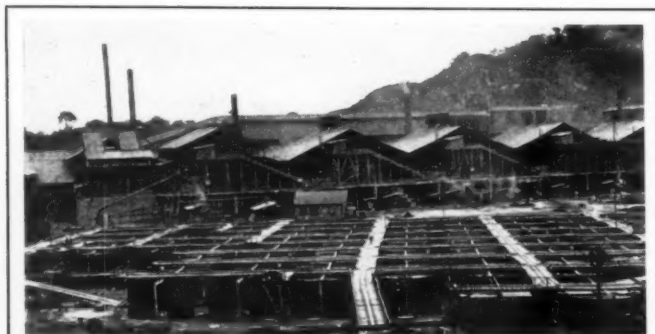
SOUTH AFRICA—Consolidated Murchison Goldfields and Development Company, originally a leading gold producer in Eastern Transvaal,

but now concentrating on antimony, is to increase output. B. L. Bernstein, presiding at the annual shareholders' meeting, announced that the decision to expand had been taken by the directors during the past year and that construction work had already begun. The increase is hoped to be effective this year. The company has recently added to its claims, now owning a total of 2,862 claims, and during the first quarter of this year milled 32,800 tons to produce 1,864 tons of antimony concentrates and cobbed ore and 2,301 oz. of gold. In the same period, development footage totaled 2,571, and the latest estimate of the ore reserve is 111,000 tons. Bernstein expressed concern at the falling antimony price, but said that the planned expansion should prevent a decrease in the company's income.

ORANGE FREE STATE—*St. Helena Mines, Ltd.*, the only mine so far to have reached reef in the Free State gold field, states that development footage in the three months ending June 30 was 4,729, all on Basal Reef. (No exposures of the Leader Reef were made.) The footage sampled was 3,265, of which 42.8 percent, averaging 17.9 dwt./ton in value and 18.0 inches in width, was payable. No. 4 shaft was advanced 266', reaching a depth of 1,927', and 215' of station cutting was done. Sinking was delayed May 25 to June 28 for scaling of water-bearing fissures disclosed while cutting the 7th level station. During this suspension, two boreholes from the bottom of the shaft to test for further water intersected the Leader and Basal Reefs at 2,000' below collar, showing low values.

BELGIAN CONGO—A recent report states that the United States Atomic Energy Commission will try to renew a five-year agreement with the Congo to buy all its uranium ore production, or about 12,000 tons of the ore per year. *Union Miniere de Haut Katanga* operates the Congo uranium mines, and an interest in this company is held by the British who are now asking for a part of the company's output and adding to the present confusion existing as to the possible outcome of negotiations. Possibly the increase in uranium ore in the United States and Canada in the past year will cut down the United States' need of so much Congo uranium so that British demands can be met without creating a "situation."

EGYPT—The Quarries and Mines Department of the Egyptian Ministry of Finance has received so many applications from foreign countries to purchase mineral products that a new decision was passed to allow exportation if payment is made in cash. The mineral most desired is phosphate, and the new decision will help Greece



AFRICA'S RICH OBUASI MINE EXPANDS

Some impression of the degree of mechanization at the Ashanti Goldfields Corporation's Obuasi mine on Africa's Gold Coast is seen in this photograph. The mine is the largest owned by the company and is reputedly the richest gold mine in the world for its size. Continual expansion and development is going on at the property and careful attention is paid to welfare and housing for the many employees.

INTERNATIONAL

particularly as that country has evidenced the most insistent requests for the passage of the law.

SOUTH AFRICA—The report of the *Union Platinum Mining Company* for the quarter ending June 30 shows that development on this western Transvaal property again revealed 100 percent payability. The total development footage was 2,216 of which 1,765' was sampled and averaged 6.05 dwt. platinum group metals per ton over 22" width. In the three months, 12,480 tons was milled, the average mill head value being 5.455 dwt. p.g.m./ton. The theoretical extraction was only 42.6 percent of the values, resulting from the semi-sulphide nature of the ore; better extraction is expected when the mine enters the true sulphide zone of the orebody. Further units of the reduction plant were put into operation in mid-August. A more recent development is the meeting between *Union Platinum and Rustenburg Platinum Mines* to negotiate an amalgamation. The latter also operates in western Transvaal.

RHODESIA—Recent negotiations in London between the *British South Africa Company* and the Northern Rhodesian Legislative Council over the company's mineral rights in the Colony have resulted in an agreement which stipulates that the rights which were held in perpetuity will now expire in 1986. Also 20 percent of the company's mineral royalties will now go to the government. Faced with considerable political agitation and the threat of heavy taxation, the company has done the best it can. Most of its revenues are derived from copper royalties which have increased sharply over recent years. However, the substantial increase in copper production planned over the next

three years is expected to offset the company's forced cut in revenue.

ORANGE FREE STATE—Mineral rights on several farms north of Virginia have been optioned by *Lydenburg Platinum Ltd.* of Johannesburg. The claims are the *Ferreirasrust 163*, *Ayah 421*, *Erasmic 614*, *Outa 16*, *Mara 613* and *Vaalkranz 220* subdivisions three and four.

SOUTH AFRICA—What is believed to be the first rod-mill installed in a Witwatersrand property has gone into operation in the mill of *Marievale Consolidated Mines, Ltd.*, Nigel. This addition to the plant was made public in August in explanation of the company's tonnage for July—61,000, as compared with 55,000 in June.



INDO-CHINA—Ample supplies of coal, bauxite and an abundance of potential hydro-electric power are attracting attention to a possible aluminum industry for the country. Although no data are available on tonnages, it is known that the *Dong-Trieu* deposits average 52-60 percent alumina and 3-7 percent silica and the *Dong-Dang* orebodies 52-56 percent alumina and 4-7 percent silica. The bauxite deposits lie in the region of the Chinese border.

CHINA—Although torn by war, China, nevertheless, has large potential reserves of bauxite and alunite. Yunnan Province is credited with about 7,500,000 tons of bauxite, Chang-Tuong with nearly 2,850,000 tons and Koei-Tcheou with reserves

estimated at approximately 70,000,000 tons. North China has the most important alunite deposits, the orebodies lying in the provinces of Tcheking, Chan-Tuong and Ho-Nan. Extremely widespread, the reserves of alunite are estimated at least 600,000,000 tons.

JAPAN—Japan may import zinc concentrates from Burma, according to reports. Trade negotiations are going on now and upon their outcome the decision to import lies.

INDIA—Another shipment of manganese is being sent to the United States by the Government of India. The shipment amounts to 100,000 tons, and is about one-third of the total manganese imports the United States received in one quarter.

IRAN AND INDIA—An agreement has been reached between Iran and Western Germany whereby Iran is to deliver asbestos, copper and lead ores, while Germany will furnish metal semis and finished products. Another agreement between India and Western Germany provides for imports into Germany of manganese ore, mica and magnesite, and the exportation to India of metal semi-manufactures.

BURMA—With operations temporarily suspended, the British-owned *Mauechi* tungsten mines in Karenni are on a care and maintenance basis at present. A small crew remains at the mines to watch over equipment and machinery.

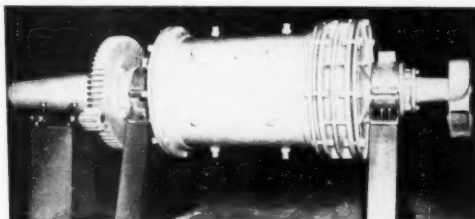
JAPAN—Iron and steel production has outstripped all post war records according to a recent news release from Supreme Allied Headquarters. In May, the last month for which figures are available, steel ingot production reached approximately 45,600 tons, pig iron production 124,500

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tons and rolled steel output 161,600 tons compared to an April production of approximately 114,000 tons of pig iron and 142,350 tons of rolled steel.

INDIA—The aluminum ore reserves of India are computed at 250,000,000 tons, according to a recent release. Some of the deposits are known to be of large dimensions and they occur fairly widespread throughout the country. Workable deposits of proved extent made up of bauxite averaging more than 50 percent alumina occur principally in Mysore, the Western Ghats, Bihar and the Central Provinces. In Kashmir, the occurrences are of the diasporite type and average 70 percent alumina. However, these ores are very refractory and do not lend themselves to extraction by ordinary reduction methods.

CHINA—Chinese consumption of aluminum averages about 300 tons monthly, all of which comes from the *Kaushon Aluminum* plant at Taiwan. Formerly bauxite was imported from Java and other countries, but now, due to the successful operation of bauxite mines in Kinmen and Changpu, Province of Fuchien, no foreign ore is imported.

TURKEY—*Ozdemir Antimuan, Ltd.*, recently blew in an antimony smelter for treating concentrates from the company's mines. Whether or not the plant will be available for treatment of custom shippers still is undecided. It is said that the capacity of the smelter is such that at least twice as much metal can be produced as is required for Turkish industry.



EUROPE

GERMANY—"Berzelius" Metallhütten G. m. b. H., Duisburg, will resume the production of pure tin on October 1 with a monthly output of about 40 tons. So far, only solder and other tin alloys have been produced during the post-war period.

YUGOSLAVIA—A steel mill in the United States may be bought by the Yugoslav government, according to recent reports. The United States government after much consideration finally granted an export license to Yugoslavia so the order for the mill could be put in.

HUNGARY—Bauxite output, although under the wartime peak production, shows a constant rise as exports increase. Home bauxite consumption is also increasing through the influence of the five year plan which starts next year. Experts count on greater exports to Germany as the alumina plants of the Western Zone are getting back on their feet and may use Hungarian ore again as they did during the war.

ITALY—The *Societa Finanziaria Siderurgica* of Rome, which controls the leading Italian iron and steel producers such as *Ilva*, *Dalmine*, etc., has decided to concentrate the output of iron and steel at Bagnoli, Naples, and at Piombino, island of Elba.

SARDINIA—New zinc ore re-

sources have been discovered in the Alghero district, Sardinia. The *Monteponi Company* is to start the exploitation of such resources through a concession obtained by the Italian Government.

CZECHOSLOVAKIA—Mercury production is to be intensified at the Kotrbach, Slovakia, mines by developing new veins not worked in the past owing to low mercury content. The better equipment available now for extraction of mercury values is expected to make working these old mines profitable.

GERMANY—The *Deutsche Messingwerke* at Berlin-Niederschöneweide has begun to erect a new tuberoiling mill, which will double the capacity for the production of copper and brass tubes. In addition, a new extrusion press will also be erected. At present, about 500 tons of remelted zinc is produced annually by the company's secondary zinc smelter.

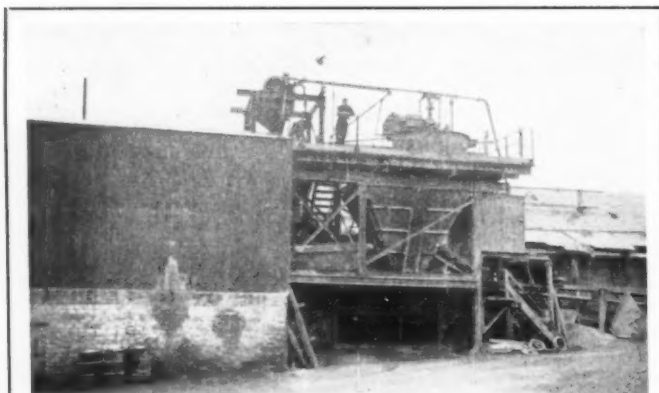
ENGLAND—About £8,000,000 will be spent by *Dorman, Long and Company*, a steel and engineering firm, to build a new open hearth steel plant at Middlesbrough. The company is already engaged in a £2,250,000 expansion program. The new plant will be completed at the end of 1952.

SPAIN—Uranium prospecting progresses in the district between Sorillera, Sort and Envin, north of Lerida. Drilling at the *Sta. Matilde* mine is now below 127 metres and radioactivity registers between 0 and 35.

YUGOSLAVIA—The *Kopaonik* lead mine is being rehabilitated and will soon begin to produce again. The mine buildings and equipment were nearly demolished during the war.

BULGARIA—Prewar metallic ore production will be increased 21 times through the present five-year plan, Minister Dobry Terpeshev announced recently. He is president of the Central Office of Economic Plans. Development of mines, mainly metal, will take 18.7 percent of the government's appropriation. Iron ore output will increase 400 percent, lead-zinc 62 percent, and copper output 27 percent. Pyrite will be 234 percent over 1948 figures. Production of minor metals will be enlarged. Of all branches of industry, mining and heavy industry will be developed the most extensively.

AUSTRIA—Austria intends to raise her crude steel production to an annual rate of 900,000 tons by the end of 1952, or 35 percent over the prewar level. The plan includes replacement of the cogging mill and ancillary equipment at Donawitz, destroyed during the war, and the modernization of some finishing equipment. The major project is the installation of a semi-continuous strip mill in Linz, Upper Austria, to handle the bulk of



FLUORSPAR PLANT IS LARGE PRODUCER

Masson Mine, Matlock, Derbyshire, England, is one of the larger gravel spar producers in the country. Above is the dressing plant showing jig house and table flotation shed. The mine is operated by Constables Ltd. by the open pit method and ore is conveyed by truck to the plant where it is crushed, washed and treated by jigging. Supplementary table flotation is used for the production of higher grade granular spar.

INTERNATIONAL

the Austrian sheet and plate production. Iron ore required by the increasing pig-iron output will be supplied by increasing the output of Erzberg mine. The Export-Import Bank aided by ERP funds is supporting the enlargement of the output of aluminum bars and semi-finished aluminum products, and 20,000 tons of pig aluminum will be supplied to the enlarged plant in 1950.

FRANCE—A one-year agreement has been drawn up between France and Spain providing for the export from France of phosphates, machine tools and vehicles, and the export from Spain of pyrites and wolfram. The amount of the agreement is 12.5 billion francs from each country.

AUSTRIA—ECA has authorized the *Alpine Montangesellschaft* to buy American steel mill and mining equipment worth 5.5 million dollars. The company is the largest steel producer in Austria.

POLAND—Zinc output in Poland is reported to be up to 87,100 metric tons per year (1948 figures), which is an increase over 1947 of 15,400 tons. Production in 1938 was 110,800 tons.

GERMANY—Belgium - Luxembourg and the three western zones of Germany have made a one-year trade agreement through which Germany will receive electrolytic copper, copper scrap, tin, antimony, cadmium, cobalt and basic slag. In turn, Germany will ship to Belgium and Luxembourg chromic acid, chrome oxide, barites, titanium oxide, lithopone and zinc oxide.

ENGLAND—The Ministry of Supply has recently guaranteed purchase of all high-grade uranium ore produced in the Colonial Empire at the minimum price of £1,540 per long ton and will give monetary assistance to uranium miners for development and construction at their mines. The government is at present interested in high grade deposits, although many low grade deposits are known, and the Atomic Energy Division of the Geological Survey is prepared to assay and report on any samples turned in by prospectors.

GERMANY—A one-year trade agreement has been drawn up between Italy and Western Germany providing for considerable exchange of goods. Italy will ship to Germany borax, sulphur, quicksilver, pyrites, pyrite residues, bauxite, ferro-silicon, antimony, zinc and lead concentrates and asbestos. Germany in turn will export coal, potash, iron and steel scrap, metal cloth and aluminum powder.

GERMANY—A new shaft is to be sunk at the *Mansfeld* mines, the only copper deposit of importance in Germany, situated in the Eastern zone. Officials hope that finally 10,000 tons

of copper can be produced from the new shaft annually.

SPAIN—Operations at the *Rio Tinto Company* remained at a steady level through 1948 in spite of the rise of costs and no corresponding rise in selling prices of the company's products within Spain. With a recent improvement of internal prices assets are expected to be much better this year.

GREECE—The Greek Ministry of Supply recently bought 1,000 tons of copper from South Africa at £113 per ton, according to reports.

FRANCE—*Union Siderurgique du*

Nord de la France (Usinor) hopes its total 1949 production of steel will reach 1,200,000 tons. In the first six months of this year 438,000 tons of pig iron and 626,000 tons of steel were produced. The figure for steel was already three-fourths of the entire 1948 production.



LATIN AMERICA

MEXICO—Discovery of important deposits of uranium by miners seek-

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INTERNATIONAL

ing continuance of mercury veins was announced by the National Institute of Resources Investigations, Mexico, D. F., recently established by presidential decree. The find is said to be near San Carlos, a Chihuahua mining camp. Field assayers from the Institute declare that samples from the new find are richer than are ores from other uranium deposits in Chihuahua and in Hidalgo and Oaxaca. The proved uranium deposits in Chihuahua are federal reserves, guarded by troops.

CUBA—Gold-silver ore has been cut by a flat diamond drill hole put out from the 200' level of *Isle of Pines Mining Company's* property. Shaft sinking to 375' continues and a new level is opened at 350'. A new roaster unit is nearly completed for treatment of 800 tons of stockpiled concentrates. The company hopes to raise its milling capacity to 200 tons per day eventually as continued development shows such encouraging results.

BRAZIL—With the demand for gold exceeding the present ability to

supply the metal, the *St. John d'el Rey Mining Company, Ltd.*, reports that nearly 320,000 tons of ore was processed to recover approximately 121,000 ounces of gold during 1948. Reserves of ore stood at 7,727,000 tons at the end of 1948, a decrease of 239,000 tons from the previous year.

BRITISH GUIANA—The *Anaconda Copper Mining Company* has been granted exclusive rights to prospect for gold for a term of six years on a territory comprising approximately 5,400 square miles. Although details are lacking as to the exact location, indications are that the grant may be on the upper Mahdia and Potaro rivers.

BRAZIL—Lying in one of the least accessible parts of the Amazon River valley, recent reports have given the location of manganese deposits that are said to contain 7,000,000 tons of minable ore with a manganese content of over 50 percent. The orebodies are in the Serra do Navio district. Transportation is the most difficult problem in their exploitation; it is said that the easiest route over which to ship ore is to construct a road to Porto Grande, transshipping by barge to Macapa.

MEXICO—Plans for the construction of a new smelter are underway by the *Comision de Fomento Minero, S. A.*, (Mining Development Commission). It will be put up in the El Triunfo region of Baja California to treat gold and copper ores. Iron and tungsten showings are reported also in the region.



OCEANIA

QUEENSLAND—The late coal strike in Australia shows its effect on output at *Mount Isa Mines Ltd.* during the three month period, May, June and July, as set forth in the table below:

	May Tons	June Tons	July Tons
Ore	50,495	47,580	5,122
Lead	3,040	3,400	411
Zinc concentrates	3,958	3,669	340

AUSTRALIA—The first shipment of South African manganese ore to Australia arrived a short time ago from Durban on the Chyabassa. About 5,000 tons of the ore has been ordered by B. H. P. for *Newcastle* steel works. Also 10,000 tons of Indian manganese will be shipped to Australia this year, according to a report from New Delhi.

NORTHERN TERRITORY—*Australian Development's* mine at Tennant Creek was completely paid for at the end of September. To investigate the extent of enriched ore, three new winzes will be sunk below the 135' level, and the main shaft will be



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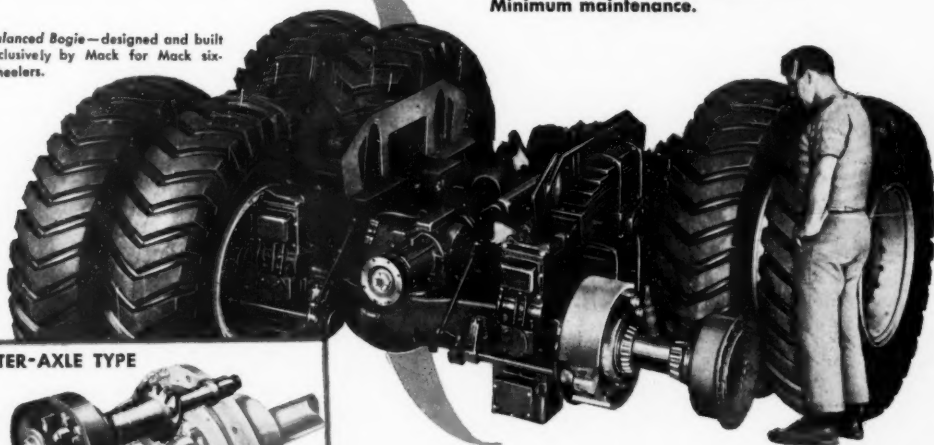
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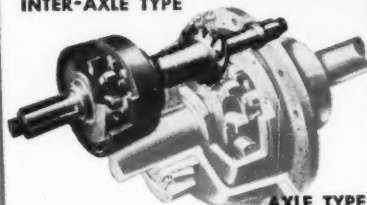
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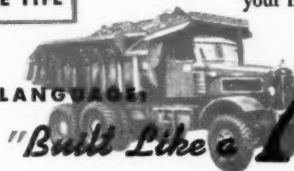
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INTERNATIONAL

deepened to 200'. Ore reserves are now being surveyed. The directors have expressed the opinion that these will be sufficient for several years crushing at the rate of 1,000 tons a month.

NEW GUINEA—Yonki Creek Gold N. L. has been formed to take over areas from Gold Prospecting and Development N. L. on the Yonki and Ornapinka creeks, Kainantu district. Proposed directors: E. G. Banks, A. P. Flockart, L. G. May, C. G. Robinson. Consulting engineer is J. C. Coldham.

VICTORIA—Production is to start soon at the Euston Lead Company (Australia), Ltd., under the supervision of E. Turnbull, chief engineer

of the United States branch of Euston. Broken Hill Associated Smelters Pty., Ltd., has assured the company of an adequate supply of pig lead.

NORTHERN TERRITORY—Carbonate Lead Mining Syndicate has sold the Edna Beryl option at Tennant Creek to Falcon Mines N. L. Cash consideration was £1,200, and Carbonate Lead was allotted 27,000 shares, paid to two shillings, in Falcon Gold.

NORTHERN TERRITORY—The winze below the 135' level of Australian Development's Nobles Nob mine passed out of high values at 48'. A southeast drive has advanced to 9½'. For the first four and a half feet, dish values indicated five oz. to the

ton; for the remaining five feet, six pennyweights per ton.

NETHERLANDS INDIES—The Netherlands-Indies Bauxite Exploitation Company has produced a record of 273,000 tons in five months this year, compared with 437,822 tons in all of 1948. By the end of 1949 the company expects to beat the record by some thousands of tons.

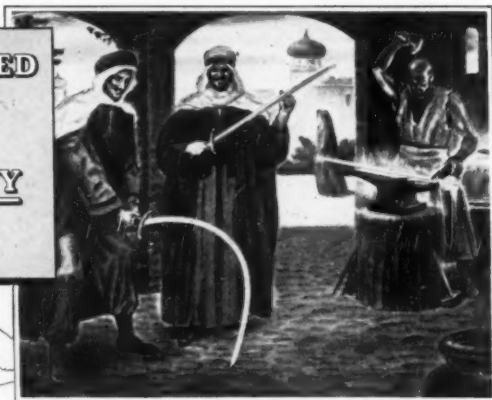
WESTERN AUSTRALIA—The purchase of Bayley's mill by New Coolgardie Gold Mines, N. L., will enable it to begin crushing sooner than expected. Conditions in the mine are difficult and will remain so for several more weeks until stopes go into full operation. Crashings for the four weeks ending June 21 amounted to 3,005 tons for 1,013 oz.

MALAYA—Tin worth \$750,000 may be imported from the Straits by Western Germany, which has been authorized to buy this amount. However, German trade circles are holding back on the purchase until the necessity of additional tin supplies is definitely proven.

NEW ZEALAND—A steel industry may be established in this country if results of tests now under way are successful, according to Arnold Nordmeyer, Minister of Industries and Commerce. All preliminary surveys have been completed and now the project is dependent on the success of a smelting test of specially prepared iron sand. Professor Lemoine, former professor of metallurgy at the University of Paris, has conducted the experiments.

NETHERLANDS INDIES—The Niavi and Mewa aluminum properties in the Asahan district have been partially destroyed by fighting, and the Niavi's plant totally destroyed. A complete inspection of the properties has been impossible to this time, and plans for constructing a hydroelectric plant in the district have been indefinitely postponed.

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NORTH AMERICA

ALASKA—E. Nesland, who is leasing and operating the old H. S. Wanamaker mining property on Vermont Creek in the Koyukuk area, has discovered coarse gold nuggets weighing as much as four ounces. Considerable rehabilitation of the property is underway and with the discovery of the nuggets, Nesland hopes to have a successful operation.

LABRADOR - QUEBEC—In the iron fields at present being developed by the Hollinger-Hanna interests, several hundred men are exploring

INTERNATIONAL

these deposits and manganese has been found during sampling of iron ore in the field. At least one showing of manganese 1,000' long has been reported and C. D. French, Quebec provincial minister of mines, estimated that of perhaps 500,000,000 tons of minable iron ore existing in the iron field a substantial quantity may be much needed manganese.

BRITISH COLUMBIA—At Sandon the Whitewater mill is now handling around 300 tons per day from the dump and tailings of the Whitewater mine. The mill is owned by *Retallack Mines* which in turn is a subsidiary of *Kootenay Belle Gold Mines, Ltd.*, and *Whitewater Mines, Ltd.* The mill is also handling ore from smaller mines in the Slokan, according to reports.

SASKATCHEWAN—Drilling is starting to test the anomalies on the 15 claims held under option by *Consolidated Astoria Mines, Ltd.* The property is at Indian Mountain Lake. The company has gold property of good merit in northwestern Quebec and is trying to acquire other proven mines in the area.

QUEBEC—The drift on *Eldona Gold Mines* new 1,150' level at its copper-zinc mine near Rouyn has been extended 270' and is showing

mineralization in the agglomerate formation. The company reports that ore may be encountered on the new levels before the main orebody is touched, as it slopes away southwesterly below the 1,000' level.

ALASKA—The *Crevice Creek* operations of E. J. Akesson and Andy Schwaesdale are in full swing sixty miles above Bettles on the John River. The company has a 1,200' landing strip and bring in most food and supplies by air. Two D-6 Caterpillars and a hydraulic plant are at the site.

BRITISH COLUMBIA—Diamond drilling on the *Sunloch* copper property on Vancouver Island by *Hedley Mascot Gold Mines* has been encouraging, according to President W. G. McKenzie. One of the reasons for the drilling program was to determine whether the ore body at Sunloch, estimated at 500,000 tons, extended into the adjoining *Gabbro* claims. The work done so far indicates that this is actually so. Some consideration has been given to moving the company's machinery from Hedley to the west coast property.

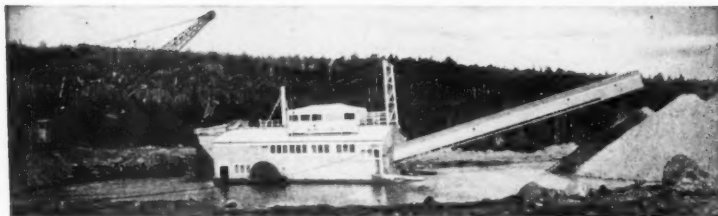
YUKON—Several silver-lead properties in the Twelvemile district about 70 miles from Dawson are being prospected with a possibility of being

worked soon. *Conwest Exploration Co., Ltd.*, has sent up an exploratory party headed by its mining engineer, Dr. Smitheringale, to look at ore bodies which miners in the district have always claimed to be well worth mining.

YUKON—All eight dredges of *Yukon Consolidated Gold Corporation, Ltd.*, are in operation this season for the first time since 1942 and, as a result, production is expected to be considerably increased this year. C. Goldthorp Hay, president, predicts the company will be able to show a net profit because of the bonus to be paid under the Canadian government's emergency gold mining assistance legislation.

ONTARIO—At a depth of around 350', *Trebor Mines, Ltd.*, has intersected 100' of mineralization with drill hole E-02. The hole was driven some 1,500' east of the shaft and the A ore body, and the last 50' show highly mineralized coarse sulphides. Manager W. A. Rukeyser says that the company's theory that the entire contact area is the focal point of other ore bodies is confirmed by this ore discovery. The property is a copper-nickel holding in the Temagami Lake area.

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elevators, power transmitting
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FREE MANUFACTURERS' LITERATURE

REFRACTORIES: The Denver Fire Clay Co. has just published a new catalog, available upon request, which includes listing of the company's refractory products; description of use; refractory construction; a general section on types of refractories, and reference data and tables which should be useful to every refractory user. Bulletin 150.

FACESHIELDS: Mine Safety Appliance's 4-page bulletin No. CN-3 describes its faceshields which protect face and eyes when handling acids, pouring hot metal, grinding and any operation resulting in flying particles and light.

PORTABLE CRUSHING UNIT: Bulletin No. C12-B8 describes features of Denver Equipment Company's mobile, compact and versatile crusher.

COMPRESSORS: Two dual-pressure low cost portable air compressors have been announced by American Brake Shoe Company's Kellogg Division. Write for details of Models B-140-DS and G-140-DS.

Copies of all bulletins may be obtained by writing MINING WORLD, 121 Second St., San Francisco 5, Calif. Please refer to bulletin number and issue in which it appeared.

AUXILIARY CORE DRILLING EQUIPMENT: "Joy Core Drill Supplies and Equipment" is the title of a new catalog on auxiliary core drilling equipment recently issued by Joy Manufacturing Company. When requesting Bulletin D-18 state type core drill on which equipment will be used.

CLASSIFIER: Just off the press is The Dorr Company's Bulletin No. 2281, which describes and illustrates a new and distinctly different Dorr classifier.

GRATORY CRUSHERS Important features, general dimensions and capacity information on the Superior McCully gyratory crusher for primary and secondary reduction of stone and ore are described in Allis-Chalmers Manufacturing Company's Bulletin 07B6004B.

DIESEL: Worthington Pump and Machinery Corp. has published a new bulletin, No. S-500-B45, describing and illustrating their new dual fuel diesel engine.

BALL MILLS AND FEEDERS: Write for Denver Equipment Company's Bulletin G-4907-N which describes both dry and wet reagent feeders and Denver steel head ball mills.

SHEAVE BLOCKS: Bulletin 130, published by the Alloy Steel & Metals Company, offers complete information on Pacific sheave blocks.

PUMPS: Write for Allen-Sherman-Hoff's bulletin about its Hydrosol pumps.

SAND PUMPS: Wilfley will send you complete details on its sand pump which has complete interchangeable parts—from metal to rubber or rubber to metal.

BALL AND ROLLER BEARINGS: Link-Belt Company's ball and roller bearings are described in a catalog which will be sent upon request.

GEARS: Pacific-Western Gear Works will be glad to assist you in all your mechanical power transmission needs, and will send you information on their gears. They design and cut all types and sizes of gears and build special gear boxes.

BENEFICIATION: Let American Cyanamid Company engineers assist you with your beneficiation problem. Send in your inquiry.

DIESEL ENGINES: In addition to present models, Caterpillar Tractor Company is now producing four new engines ranging up to 500 hp., and four new Electric Sets generating up to 314 kw. Ask for specifications.

LOCOMOTIVES: Write for Goodman Manufacturing Company's Bulletin CL-491 which describes its trolley, storage battery and combination types of locomotives.

DIAMOND CORE DRILLING: Boyles Bros. are equipped to give you complete service in exploratory and blast hole drilling or tunneling operations. Request details.

CRUSHERS: Nordberg Manufacturing Company's Symons Cone crushers are available in three types—standard, short head and intermediate—and in a wide range of sizes to fit your requirements.

FLOTATION: Dow Chemical Company's new "Flotation Index" is now ready and available upon request. It is a comprehensive handbook of flotation fundamentals.

CONVEYORS: Jeffrey Manufacturing Company's belt or chain conveyors will meet your operating conditions. These sectional type conveyors mean continuous transportation at low cost. Complete information upon request.

SHOVEL LOADER: The Joy HL-3 Shovel Loader for small drifts can load up to two tons per minute. Write for details.

GEIGER COUNTER: W. D. Brill Company's pocket-size "Nuclear Sniffer" weighs only two pounds and uses two ordinary flashlight batteries for power.

DRILLING: Write for Kenametal's free booklets: "Rotary Drill Bits," "Core Drag Bits," and the "Booklet on Drilling."

ROTARY DRYERS, KILNS, COOLERS: Hardinge Company has just released a 32-page catalog on its complete line of "Ruggles-Coles" rotary dryers, kilns and coolers. Ask for Bulletin 16-D.

MINE CARS: Catalog No. 40 will describe C. S. Card Iron Works' mine cars.

FLOTATION: Write for Denver Equipment Company's new booklet called "Denver Sub-A Flotation." Write: Denver

Equipment Company, 1404 17th Street, Denver, Colorado.

COMPRESSOR: Davey Compressor has just issued a bulletin describing its new truck-mounted Field Service Unit. Ask for Bulletin E-232.

CONCENTRATING TABLES: Deister Concentrator's Bulletin 118A contains details of the company's Super-Duty Diagonal Deck concentrating tables.



New Bucyrus-Erie walking dragline.

Bucyrus-Erie Announces New Walking Dragline

The 500-W, a new electric walking dragline with bucket capacities ranging from 8 to 12 cubic yards and booms from 165 feet to 205 feet, has been announced by Bucyrus-Erie Company, South Milwaukee, Wisconsin. The new machine has some of the features of Bucyrus-Erie's 650-B and 1150-B strippers, notably the individual drag and hoist motors and the twin drag lines.

Working weight of the 500-W is 1,275,000 pounds. Maximum dumping height of the 205' boom is 107', approximately the height of a 10-story building. With the same length boom at a standard working angle, the excavator can dig 135 feet below the surface on which it rests. Material can be moved 416 feet horizontally without throwing the bucket.

Detailed information on the 500-W electric walking dragline may be obtained by writing MINING WORLD, 121 Second St., San Francisco, Calif.

Joy Sulmet Rock Bit For General Application

Development of a new Joy Sulmet rock bit, designed for general drilling application, has been announced by the Joy Manufacturing Company, Henry W. Oliver Bldg., Pittsburgh 22, Pa. It is a skirt-type bit of the four-point cross design with tungsten carbide inserts for maximum penetration. It is available immediately in sizes as follows: 1 3/8", 1 1/2", 1 5/8", 1 3/4" and 2 1/4". Other sizes will be made available at a later date.

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U. S. Dollars Pour Down Foreign Mines

● Washington, as this was writ in September, had about decided it was Good Business to loan a Balkan boy named Joe Broz (you know him better as Tito) \$25,000,000 of Yankee cash wherewith to equip his copper, lead and zinc mines . . . so Yugoslavia can complete knocking of American copper, lead and zinc miners in the heads. Stipulation was that with Tito's mines fixed up to produce, Uncle Sam would buy their output—for stockpiling protectively against another Joe, pseudonym Stalin, who's been trying to make Little Joe Broz behave.

● While that one's soaking in, brethren of the industry, here's one from closer home: Since I broke out of Fort Miley Hospital I'm trying to hang onto the 37 pounds I regained through four months' convalescence there—obeying the dietitians and eating plenty of eggs. And—said eggs cost me 90 cents a dozen, because of federal subsidization of egg prices. As this is written, the Government has salted away in a Kansas cave and sundry warehouses more than two billion eggs. Since January Uncle Sam has bought (with your money) \$73,391,450 worth of dried eggs. Last year egg-purchases totaled some \$35,000,000. Agricultural Secretary Brannan opined the price-crutch will hit \$200,000,000 in 1950.

● If any wild-eyed promoter tried to get away with a thousandth of such a stunt in the mining industry, the SEC would emit loud shrieks of rage and have him jailed pronto. But—in farming it's different, y'know . . . and the "Brannan Plan" is the most amazing thinking turned loose on the Potomac since the British touched off their fires there in 1812.

● The really painful side of the Potomac news is that our strange State Department does as many funny things under Mr. Acheson as it did 'way back yonder under Cordell Hull. And that, mining brethren, was when those "reciprocal trade agreements" were figured out by said State Department, as "good-neighbor" tactics. Remember what they did to prices of strategic metals? Specially copper?

● For years this column has been frankly an advocate of higher price for gold. As this is written, the international economic conference at Washington is getting into full swing—and don't think that there will not have been, by the time you read this and the Spokane Mining Congress pow-wow is past-tense, herculean efforts made to (a) devalue the pound-sterling, and (b) devalue the Yankee dollar. My straight-thinking co-columnist "The Wanderer" gave you some golden thoughts last month and has more up his sleeve.

● But what are we going to do when Marshall Plan advocates blithely go about stimulating metal mining in "darkest Africa" with . . . with your money and mine, Mister? Tom Finletter, topkick of ECA's mission to the United Kingdom, not lang syne told Congress that "skilled American manpower as well as U. S. dollars would help unlock huge deposits of natural resources in the African colonies"—and England asked for Yank technicians, geologists, and others, to get the job in motion. It is to be hoped that by the time you read this the American Mining Congress will have taken steps to scotch that move.

● In the August issue I lightly hinted that Federal methods and stunts involved in the current "uranium rush" were misleading scads of trusting souls. Wasn't I right? At any rate, I'll repeat that—and stronger.

Addison N. Pratt

OCTOBER, 1949



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MINING MEN AND THEIR ACTIVITIES

About men who are well known and prominent in American metal mining circles

Stanley E. Avery became master mechanic for Discovery Yellowknife Mines, Ltd., Yellowknife, Northwest Territories, Canada, bringing with him his experience as mechanical superintendent of Kailan Mining Administration, located in North China.

A. H. Barrios, a recent graduate of the Mackay School of Mines, is taking the special training course for junior engineers put on by the Anaconda Copper Mining Company at Butte. He can be addressed at 733 West Park Street.

Emil Bender is a new director for El Dorado Gold Mines, Ltd., which has property in the Awakening District near Winnemucca, Nevada. He is from Shafter, California.



JAMES H. WREN, consulting engineer, has returned from a two-year economic surveying trip of mining properties in South and Central America and is now chiefly engaged in managing and consulting work at California lode and placer gold mines.

Don C. Cameron has been made director of the state uranium school, Carson City, Nevada.

R. D. Dear is general superintendent with the Constant Mineral Company, a gold placer concern, at Lovelock, Nevada.

E. J. Farley is electrical engineer for Copper Canyon Mining Company, Battle Mountain, Nevada. He was formerly employed by M.G.L. Mine of Fernly, Nevada; Bonanza Mines, Oregon; and Verde Central Mines, Jerome, Arizona.

E. W. Felegy, mining engineer, is carrying out experiments in underground radio communication in the Lake Superior mining districts as assistant to **John A. Johnson**, supervising engineer, District F, Health and Safety Division, U. S. Bureau of Mines, Duluth, Minnesota. He transferred from a similar position with the Salt Lake City, Utah, office.

Kenneth E. Knapp is now with the U. S. Vanadium Corporation at Bishop, California, having resigned his job with the Burrows-Caledonian Mine, Colorado.

Robert Lenon, consulting mining engineer, reports the opening of a third office at Nogales, Arizona. His other offices are at Patagonia and Bisbee, Arizona. With a partner (as Lenon and Vasquez), he has recently shipped two carloads of copper ore to

the Hayden smelter from the old Volcano mine.

Austin L. Reid is operator for Newmont Mining Company's Deep Mines operation at Goldfield, Nevada.

Charles A. Marr is a mining engineer for St. Joseph Lead Company, Bonne Terre, Missouri.

James M. Hill has his own consulting office on mining geology and mineral economics at 182 North Court Street, Tucson, Arizona. He had been geologist for the Union Carbide and Carbon Company and previous to that for the U. S. Geological Survey.

LeRoy Traeger has become manager for Anaconda Copper Mining Company's Conda, Idaho, phosphate operations. He had held the job of mine superintendent, but moved up to take the place of **T. C. Russell**, who is on a leave of absence. **Tom O'Brien** is the new mine superintendent. He had formerly worked for Mountain City Copper Company.

C. E. McManus recently became assistant to the general manager of M. A. Hanna Company's mines in Minnesota.

H. L. Hartman, Jr., has been named state mine dust engineer, assigned to the office of State Mine Inspector, **Clifford Murdock**, Phoenix, Arizona. He succeeds **James E. Werner**, resigned. Hartman is a graduate mining engineer from Pennsylvania State College. He has had three years' experience in mine ventilation and dust control work.

James T. McDonald is doing surveying work for Bunker Hill and Sullivan Mining and Concentrating Company at its Kellogg, Idaho, works.

Joseph Armstrong, mining engineer, is now associated with Pacific Northwest Alloys at Spokane, Washington. This company is an affiliate of Chromium Mining and Smelting Company. He had been carrying on engineering activities at Sault Sainte Marie, Ontario.

A. Ben Shallet is new superintendent of operations at the Bald Butte and Carbonate mines, Marysville, Montana. Carbonate mine is financed by the Silver Dollar Mining Company, located in Idaho's Coeur d'Alene district.

Frederick G. Michels, formerly representative of the Mine Safety Appliance Company, is now safety director for the North Range Mining Company at Negaunee, Michigan. He will be in charge of safety work at all the company's mines.

Earl F. Hastings, metallurgical engineer of Phoenix, Arizona, has been appointed director of the new Securities Division, Arizona Corpo-

ration Commission. The division was created by act of the last Arizona legislature for the purpose of establishing control and supervision over stock-selling operations within the state. Hastings is a member of the National Society of Professional Engineers and the American Institute of Mining and Metallurgical Engineers. Since 1945 he has been secretary-treasurer of Western Perlite Corporation, Phoenix.

Fred Wann rejoined his prospecting expedition near Snag, Yukon Territory, after having to go to Juneau to order more machinery and equipment for the party.

W. R. Sturdivant of Mesa, Arizona, and associates are developing a gold placer property, 160 miles northeast of Hermosillo, Sonora, Mexico, along the Yaqui River.

John W. Chester has been transferred from Claypool to Globe, Arizona, and can be reached at Rt. 1, Box 39M. He is junior mining engineer for Miami Copper Company.

Robert L. Bolmer, who resigned from the New Jersey Zinc Company at Gilman, Colorado, is now working for the U. S. Bureau of Mines at Denver.

Frank Woodruff, former captain of the James mine at Mineral Hills, Michigan, is now general superintendent of the Warren Foundry and Pipe Corporation mine at Mount Hope, New Jersey. The mine is said to have produced iron ore since the days of Washington.

O. L. Pringle, former vice president in charge of operations for Columbia Steel Company, San Francisco, California, has been elected vice president in charge of sales. He has been succeeded in his former position by **Laurence S. Dahl**.

E. S. McGlone was elected a director of Metals Bank and Trust Company, Butte, Montana. He is vice president in charge of Western operations of Anaconda Copper Mining Company.



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Donald F. Virant has joined the engineering staff of the Cuyuna Ore Company, Crosby, Minnesota, as mining engineer.

H. J. Steinbuechel, Jr., and F. J. Hitchcock, mining engineers; and John A. Riddle and William L. Zeiher, metallurgical engineers, have joined Oliver Iron Mining Company's training division, Duluth, Minnesota.

Carl R. Moss, associate professor of engineering administration at the Michigan College of Mining and Technology, Houghton, Michigan, has been made acting head of the department to replace Professor E. J. Townsend, now treasurer.

John F. Peeso is now employed by the Climax Molybdenum Company at its operations at Climax, Colorado.

John R. C. Mann can be reached at 14 Wall Street, New York, in care of the Newmont Mining Corporation, with which he is now associated.

Oscar A. Fischer has returned to Denver after two months of advisory work in South Africa for a British company.

Danford J. Dodds is at Bagdad, Arizona, working for the Bagdad Copper Corporation as assayer.

John H. Hager, mining engineer, is now with the Lake Mining Company's Embarrass mine at Biwabik, Minnesota.

George A. Davidson is at Dumas, Texas, with the Chemical Construction Corporation, having resigned from the American Cyanamid Com-

pany at Willow Island, West Virginia.

C. J. Parkinson is now vice president and director of Dragon Consolidated Mining Company, at Tintic, Utah. The mine is affiliated with Anaconda Copper and North Lily Mining Company.

A. J. Doyle retired recently from his position as engineer for Pickands Mather and Company, Duluth, Minnesota, and has moved to South Bend, Indiana.

Lewis D. Anderson is now employed by the General Chemical Division at Galax, Virginia. He resigned from his position with Resurrection Mining Company, Leadville, Colorado.

R. S. Cockle has been appointed mine superintendent for the Idarado Mining Company, Ouray, Colorado, succeeding George W. Murray. Murray is now with Lepanto Consolidated Mining Company in the Philippines. Cockle had been night foreman.

Walter E. Lewis is now with the United States Bureau of Mines at its Minneapolis, Minnesota, office, of which Paul Zinner is chief.

A. L. Hays has been transferred to Empire Zinc Company's New York offices from Hanover, New Mexico, where he was superintendent.

Robert F. Barney has moved from Carlsbad, New Mexico, to Abernathy, Texas, to continue field work for the Stearns-Roger Manufacturing Company.

Obituaries

E. T. Stannard, 66, president of Kennecott Copper Corporation. Arthur D. Storke, 55, president of the Climax Molybdenum Company, who would have succeeded Stannard as president of Kennecott at the end of this year, and Russell J. Parker, a vice-president of Kennecott and president of Quebec Iron and Titanium Company, were killed in an air crash on September 9 near St. Joachim, Quebec, Canada.

Walter Stalder, 68, consulting petroleum geologist and member of the AIME since 1915, died March 15 at Oakland, California. He held B.S. and M.S. degrees from the University of California and was a pioneer of northern California oil and gas development, having brought in the Buttes area nearly single-handed.

Arno S. Winther, 67, former general manager of Miami Copper Company, Miami, Arizona, died August 20 at La Jolla, California. He had served as consulting engineer for the Miami organization since his retirement in 1944. His past experience includes jobs in mining companies in Utah, Nevada, Colorado, Oklahoma, Peru, and Africa.

E. M. Moores died July 11 at Glendale, Arizona. He was president of the Gladiator Mining Company and had been first chairman of the Crown King Council, Arizona Small Mine Operators Association.



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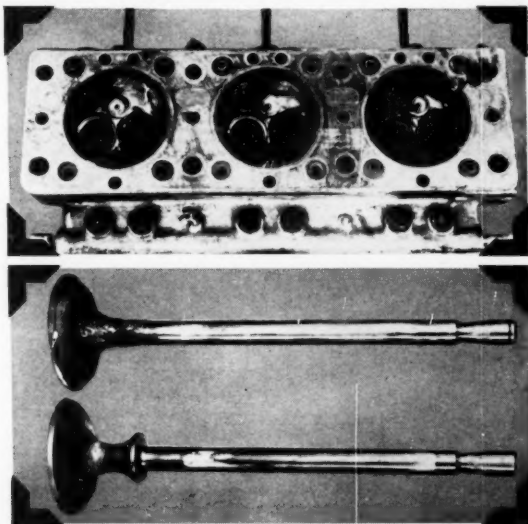
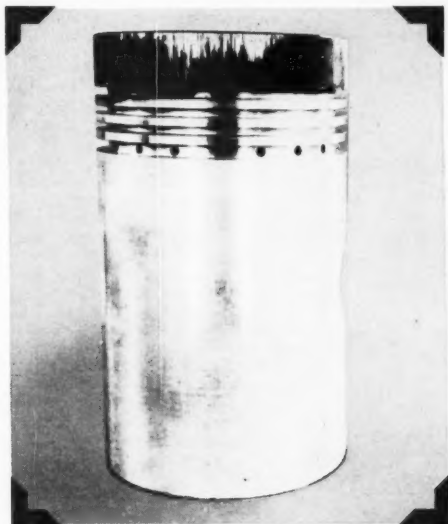
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STANDARD ENGINEER'S REPORT



TEST DATA	
LUBRICANT	RPM Delo Supercharged Lub. Oil
UNIT	Caterpillar Diesel - D13000 5 7/8" x 8"
CONDITIONS	Cont. high load - Pumping water
FUEL	Regular Commercial Diesel fuel
TEST PERIOD	4 months
LOCATION	Coolidge, Arizona

CYLINDER WEAR REDUCED 75% BY NEW LUBRICATING OIL



RPM DELO SUPERCHARGED LUBRICATING OIL held cylinder wear to 0.0007 inches per 1000 hours in a stationary Diesel where ordinary heavy-duty type oil had allowed over four times more wear, or 0.0031 inches. The piston, head, and valves above, photographed after they had operated in the engine 965 hours under severely accelerated

conditions on RPM DELO Supercharged, are typical of the excellent condition of parts and cleanliness maintained throughout the engine by this newly developed oil. All piston skirts were varnish-free, all oil-return holes open. Average ring-gap increase per 1000 hours was reduced from 0.01625 inches to 0.00350 by the use of RPM DELO Supercharged Lubricating Oil.

REMARKS: This new product in the RPM DELO line is specially compounded to solve ring-sticking, deposit formation, and excessive wear problems in Diesel engines operating in extra hard service. Many field tests have proved it to be particularly valuable where continuous high loads or high-sulphur content Diesel Fuels cause these conditions.

In the test reported here, the engine ran the full 965 hours at approximately 90% of governed full load engine rating. Drain periods were extended to 240 hours, however all 24 piston rings remained free, no troublesome deposits formed in the ring belt or on other parts, and oil compound depletion was negligible.

Besides providing unusual resistance to oxidation, the compounds in RPM DELO Supercharged Lubricating Oil clean existing gum and lacquer from parts, prevent internal rusting and bearing corrosion and stop oil foaming.

STANDARD TECHNICAL SERVICE checked and reported this test. If you have a lubrication or fuel problem, your Standard Fuel and Lubricant Engineer or Representative will give you expert help; or write Standard of California, 225 Bush Street, San Francisco 20.

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precipitates — NORTHWEST

Silver Ore Strike Made At Montana's Nancy Lee

Rich silver ore was struck by Nancy Lee Mines, Inc., Superior, Montana, while drifting along the large vein developed over the last several years by lessee, L. G. Smith.

The orebody at the strike point is 10' wide with the richest section running from three to nine feet wide. An advance of 45' has been made on the oreshoot with the last 20' showing solid silver-copper ore. Drifting is continuing.

Some of the ore has been run through the 125-ton flotation mill with such excellent returns that stock trading jumped markedly on the Spokane exchange.

Smith also opened a good showing of ore in the Eldorado tunnel and is stoping ore from a three to five foot wide vein.

Milling operations, on the strength of the two finds, will be increased to three shifts.

Monazite Processing Studied in Idaho

Aiming for a new industry for Idaho, the University of Idaho at Moscow, Idaho, will study the possibility of home processing of monazite. These sands contain up to 15 rare earth metals which will be separated and analyzed with a spectrophotometer and flame photometer in the

chemical engineering laboratory at the University.

L. A. Jobe, professor of chemical engineering, and Donald T. Bray, research fellow, are heading the studies. Rare Earths, Inc., of McCall will supply the sand.

As monazite contains thorium, a license had to be obtained from the Atomic Energy Commission for the research.

Recent surveys of Idaho's monazite supply indicate there are hundreds of thousands of tons left on the ground after gold dredging operations.



Ace Gold Mines, Inc., has been producing gold since 1910, but recently began mining tungsten and thus becomes first in north central Idaho to produce the ore. The mine is at Fall Creek, 127 miles southeast of Lewiston. Felix C. Funke, secretary-treasurer, said the possibility of recovering tungsten occurred to the company only recently and since then the mill and recovery plant have been re-equipped to handle the ore.

Re-opening of the *Black Horse* lead-zinc mine near Murray, Idaho, by the present owners, *Senator Silver*

Mines Company, is progressing well. For several months the mine has been under development. A new road was built and the old one repaired. A compressor and other mining equipment was installed, several tons of rail was laid, and new ore discovered near the surface. George H. McGinnis supervises work and expects the mine to be in full production almost immediately.

Atlas Mining Company, Mullan, Idaho, has levied an assessment of one half cent per share on its outstanding capital stock in order to carry on a small amount of rehabilitation and keep the underground workings ventilated and accessible. Examinations of the property by interests considering its deeper development cause the directors to feel that the mine should be kept in good condition. The holdings comprise 59 claims, with approximately 15,000' of crosscuts and drifts and 800' of vertical shaft, in the lower, or *Atlas*, tunnel, and there are in addition 8 tunnels of smaller proportion at shallower depths. The property is located in the east end of the "south side" area of the Coeur d'Alene district.

The 1,500' crosscut tunnel driven by *Bismarck Mining Company*, Kellogg, Idaho, has cut the south vein and grab samples show commercial values. Robert Gammell, general manager, said the vein measures between five and seven feet over a distance of 17'. The entire vein is not of commercial value, but the present development is encouraging. The *Bismarck* company, organized in 1924, was first controlled by Netherlands interests, then in 1946 control was bought by a group of Spokane mining men who installed new machinery and stepped up development. President is Charles A. Powers of Spokane.

Two of three carloads of lead concentrate shipped to the Bunker Hill smelter by *Golconda Lead Mines*, Wallace, Idaho, recently show an average of 72.05 oz. of silver, 74.9 percent lead and 3.925 percent zinc per ton. *Golconda* also shipped two cars of zinc concentrate assaying 55 percent zinc to the Montana smelter of *Anaconda Copper Mining Company*. A crew of approximately 25 men at the mine are at present engaged mainly in repair work and the building of a second escapeway. Development will start again when this work is done. *Golconda* also is milling ore belonging to small operators in the area whose properties are not equipped with concentrators.

Development of the 2,200' level of *Livingston Mines, Inc.*, Mackay,



IDAHO CHEMICAL PLANT EXPANDS

Food Machinery and Chemical Corporation has put into operation the first of two electric phosphorus furnaces at its Pocatello, Idaho, plant. The second furnace is being built now. The company's operations here are handled through its Westvaco Chemical Division.

Idaho, is turning up good deposits of lead-silver ore, according to T. S. Mackay, manager. The company is about finished building a 100-ton flotation plant on the property. The upper workings are leased by David Bell, who is steadily taking out ore, while the company carries on exploration work in the lower levels. The company has shipped out 76 carloads of crude ore since November, 1947.



Ralph E. Neyman, vice-president and operations consultant of the Silver Bowl, Inc., Kellogg, Ida.

Silver Bowl, Inc., Kellogg, Idaho, crosscutting on the 100' level at a rate of 10' per day, has advanced over 100' and is running across stringers of lead-zinc-silver ore regularly. Eugene Iverson, company engineer, is supervising the work. One six-inch wide stringer found shows good values in steel galena. The vein is sloping away from the crosscut and about 150' of drifting is planned after the vein is struck so as to get under the ore-shoot above.



Montana Mining and Engineering Company of Philipsburg, Montana, headed by F. S. Neal, president, has completed negotiations on a working agreement with Idaho and Washington interests set up by Colonel Robert M. Hardy, Jr. and Norman M. Smith of Kellogg, Idaho. These men and their associates will operate under the firm name of *Bagdad Mining Company*, an Idaho corporation formed to carry out the agreement. The company's Montana program includes an extensive exploration of the *Bagdad* group of quartz lode and placer mining claims owned by the incorporators of Montana Mining and Engineering Company. The claims are in Williams Gulch, 30 miles west of Philipsburg. Neal and W. L. Degenhart, engineers for Montana Mining, have recently completed an 18 months study and report on the properties, including sampling and

mill testing of ores. The Idaho concern has accepted the property as warranting an extensive exploration program and has already completed construction of about three miles of road to the site from the county road.

Anaconda Copper Mining Company recently completed a new contact sulphuric acid plant with 150 tons capacity per day at its Anaconda, Montana, property. With the installation of new equipment at the plant, the company's production of treble superphosphate will be doubled. Purpose of the expansion is the growing demand for superphosphate fertilizers in the West. At Butte, the company is sinking the Kelley Shaft in Dublin Gulch. This hoisting shaft, which is 9 x 38' in cross section, will have four compartments and will give access to the extensive low-grade orebodies fully determined by exploration, sampling and mill tests in connection with the Greater Butte project. The shaft will be equipped with a 3,000 hp. hoist to handle the 12-ton bottom-dump skips. On haulage levels ore trains will consist of 20 five-ton cars pulled by electric locomotives.

A new company has been formed at Manhattan, Montana, called the *Hogan-Coghlan Gold Mining and Reduction Company*. Organized by Dr. Kemp Coghlan of Manhattan and Nelson S. Hogan of Bozeman, the firm will operate three claims northwest of the Revenue mine at Three Forks, Madison County, with offices at Norris. The company will employ 31 men. About 100 tons of ore per day will be shipped to Butte for smelting. Superintendent of operations is Ben Hatfield.

Silver Butte Mining Company, a zinc-lead producer near Libby, Montana, was formed several years ago to put into production a group of old patented mining claims once belonging to the Kentucky-Vermilion Mining Company. According to Andrew Prader, this company has developed a large tonnage of ore but discontinued operations as selective flotation processes were not advanced enough in the '20's to separate zinc sulphide from lead sulphide. Silver Butte, under James Gregg's management, has now finished a 340' raise from the lowest level to two upper tunnels. Development consists of 9,000' of tunnels and raises and depth of the shaft is 640'. An 80-ton mill is in operation and producing concentrates which are trucked to Kellogg, Idaho, for smelting.



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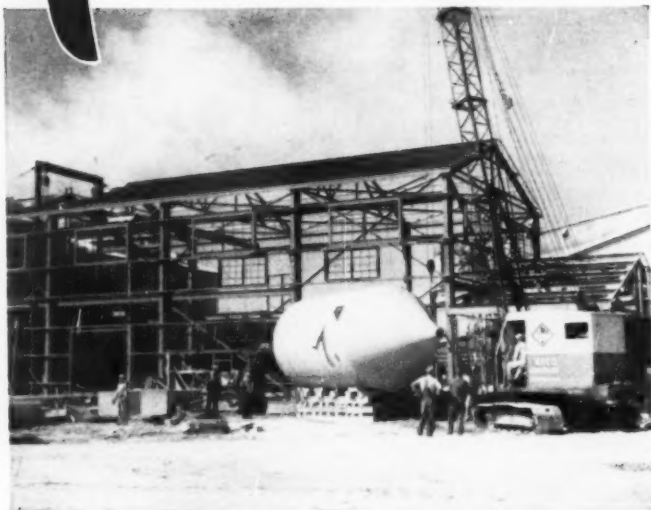
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July, 1950, according to Senator Cain of Washington. If Congress approves the request before it for appropriations, the force of nearly 5,000 workmen on the site now will continue on the job, various new projects would be added and present work completed.

Control of Northwest Gypsum Company, Colfax, Washington, has been acquired by the Montana firm, Westates Agricultural Chemical Company, which announced through L. Lore Wartes, consulting engineer, that Northwest's gypsum deposit on the Snake River, Washington County, Idaho, would be put into production within 60 days. The initial operation of the Northwest Gypsum Company will be in the production of agricultural gypsum for plant food and soil structure improvement. Gypsum will also be sent to a processing plant to be built at Pasco, Washington, by Westates Agricultural Chemical Company for admixtures in complete fertilizers, where needed. The president of Northwest Gypsum Company is Roy Endsley of Colfax, Washington.

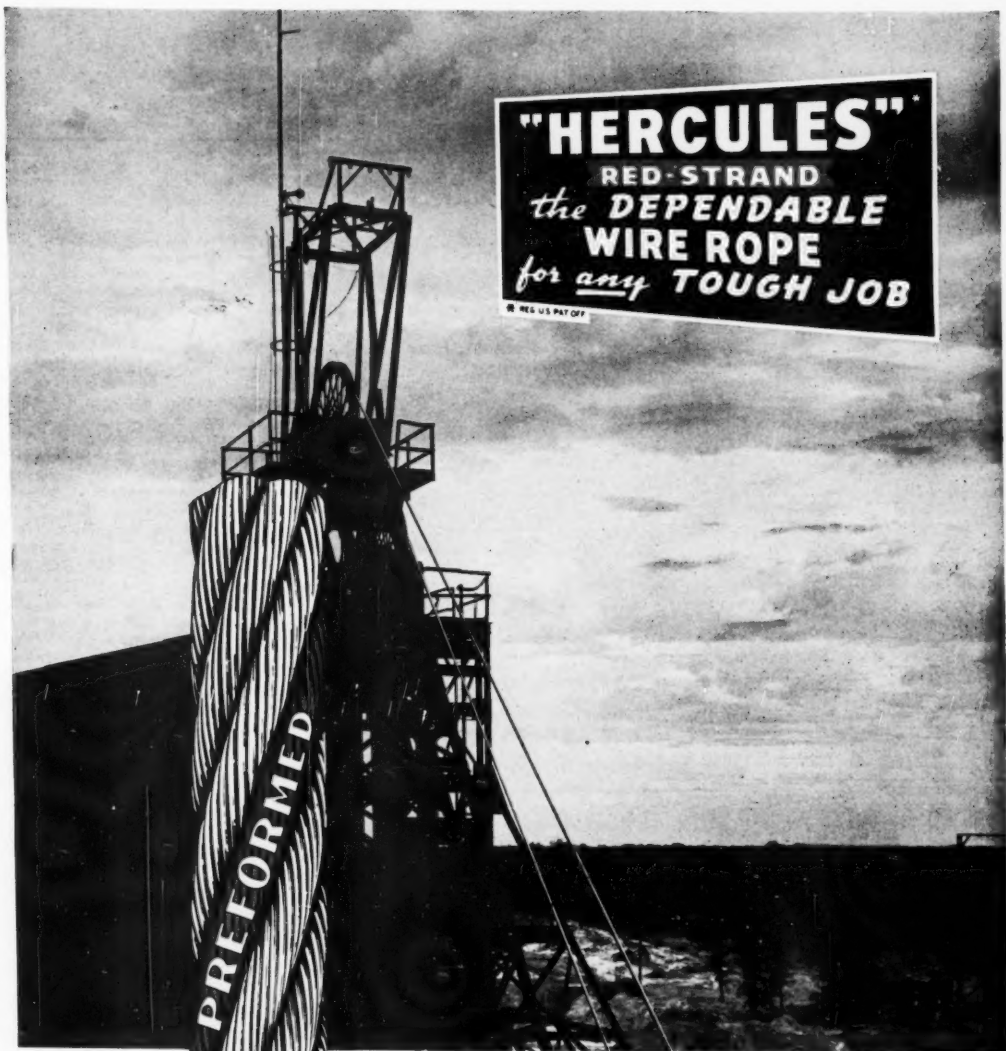
Keokuk Electro-Metals Company at Rock Island, Douglas County, Washington, is installing a second blast furnace, and Pacific Northwest Alloys at Mead will probably start operating a third furnace when their metallurgical plants reopen. Both plants shut down when the steel business slumped during the summer.

As soon as the Sunny Peak Mining Company, organized last January, raises \$10,000, work will begin on the nine unpatented and 13 patented claims which have been filed, stated C. J. Butler, supervising engineer. The company also has located two new claims. All claims are at Mineral Hill near Conconully, Washington. Ore shipments can begin as soon as \$45,000 is raised. President of the company is C. J. Weller, and Hugh Ringquist will be superintendent of mines. Silver-lead is contained in the ore.

Pend Oreille Mines and Metals Company, Metaline, Washington, is doubling its power plant capacity. The intake tunnel will be enlarged and another generator installed.

Permanente Metals Corporation plans to spend \$1,000,000 for new machinery for the rolling mill it recently acquired at Trentwood, Washington. Some of the machinery has been bought already and the remainder is on order. The new equipment will enable Permanente to manufacture at Trentwood quite a number of new products such as corrugated aluminum for construction, stamped aluminum for remanufacture into electrical fixtures, aluminum louvre-type screens, cold rolled construction pieces, automobile parts and complete aluminum houses. The working force of 1,500 is expected to be increased gradually as the above changes get underway.

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Silver Shield Mill Nearly Completed

Nearly completed is the new 250 ton flotation mill being erected by Silver Shield Mining and Milling Company in the Ouray district of Colorado. At a cost of \$125,000 (which does not include the price of the mill) the company dismantled the mill at Hawthorne, Nevada, shipped the parts to the present site and ordered new equipment, including 14 tons of liners and a rock crusher. A new assay plant has already been built for company and custom use.

The mill is to handle ore mined and trammed from the Wanaca property, 12,000' above the mill and leased by Silver Shield on a long term contract. Also to be processed is ore from nearby dumps and mines controlled by both Silver Shield and a number of other companies and individuals. These combined sources will keep the mill operating many years.

Copper-lead and zinc concentrates will probably be trucked to Montrose, Colorado, and from there sent by rail to the United States Smelting, Refining and Mining Company's smelter at Salt Lake Valley, Utah.

Officials of the company, L. E. Stein, manager, and Phil Page, superintendent, state that their plant, when finished, will be worth \$250,000.



In 1903 the Chipeta Mining Company opened a mine near Ouray, Colorado, and drove 3,700' of tunnel wide enough for a double track before it closed. Now Roy Van Houten is reopening it again and after rehabilitation and further exploration he hopes enough ore can be taken out to make the project lasting.

The 1,000' development tunnel being driven by Lupton Mining Company, Georgetown, Colorado, should open up a large body of lead and silver ore, according to Ellis P. Lupton, president. The tunnel lies under the present Grizzly mine workings and is partially designed to eliminate a water drainage and hoisting problem in the Grizzly. Diamond drilling on the level of the new tunnel has shown values in lead and silver. The company also is developing the Boodie gold mine in Gilpin County and is driving a 300' raise between the Moline and Mineral Chief mines near Georgetown. Other property owned

is the Griffith group, the Commonwealth tunnel and mill, with 64 claims, and several other Clear Creek County groups. Most of the property is undergoing development only, except the Grizzly, which is running mine and mill on three shifts daily.

The Akron and Erie mines, owned by Callahan Zinc-Lead Company, Whitepine, Gunnison County, Colorado, are producing at a rate of nearly 75 tons of ore and the same amount of waste per day. Conventional rock drills, mucking machines, and small portable slusher hoists are used and two-ton ore cars are used for tramping on the main tunnel level. Surface buildings include facilities for 80 to 100 men, a sawmill, framing house, flotation plant, tailings unit, and others. With so much equipment at hand Callahan has been able to make a profit from the large amount of lower-grade ore which, until the company acquired the mines, had never been touched. The mines are developed by 2,000' of drifts, crosscuts and raises and a 4,000' tunnel, and continues to develop new ore.

Crescen Consolidated Gold Mining and Milling Company, which is building a new 143-ton hoist on its property at Cripple Creek, Colorado, reports that the foundations have been completed for the hoist and for the new hoist house. The hoist house is to be 60' wide, 40' long and 15' high, and has been moved back 60' beyond the old hoist house. The distance between the sheave wheels at the top of the galloways-frame to the center of the drums on the hoist is now 200'. Wesley Moulton is superintendent of the project.

Expansion is planned by the Minerals Engineering Company, Grand Junction, Colorado, according to Blair Burwell, head of the company. A 37' x 100' modern shop and workroom for the diamond drilling depart-



BLAIR BURWELL, head of Minerals Engineering Company, who announced expansion of the company's plant facilities.

ment is to be built of brick and glass. Loading docks and other necessary facilities will be included. The company is operating 22 diamond drilling rigs, an increase of seven rigs since April, and has grown out of its

present building space. The rigs operate in the Colorado Plateau uranium and vanadium area.

An eight-week expedition by the Scientific Prospecting Company in the uranium country is close to completion and should reveal data of considerable interest to prospectors and geologists in the areas covered. The party, sponsored by the Midwest Electronics Laboratories, Inc., Omaha, Nebraska, is exploring areas adjacent to Pueblo, Walsenburg, Alamosa, Durango, Montrose, La Sal Junction and Grand Junction, Colorado, and the Colorado plateau in northern Arizona. The Midwest Electronic Laboratories equipped the party with Geiger counters and all other field equipment needed for radio-active ore indication. Laboratory equipment for chemical analysis and assaying is carried also. Photographing, assaying and claim staking goes on wherever radio-active ore is found. The main purpose of the trip is to test equipment, survey ores and study geological structures in the uranium "belt" and to develop new methods and new equipment for prospectors.

Park City Consolidated Mines Company of Salt Lake City, Utah, has acquired the property of the Keystone Mining Company and several other claims near Crested Butte, Colorado, and has started operating them. The Crested Butte property has two old tunnels, 700' and 500' long which are being explored. So far several silver-lead-zinc ore shoots have been revealed averaging 5' to 10' wide and one, at least, running 200' long. Two shifts are engaged in exploration work in charge of Nolan Probst, who is superintendent of the company's Missouri operation, and John I. Kasteler, engineer. Park City has filed 19 claims along the main Keystone fissure, which is thought to be a part of the famous old Ruby silver district's fissure, a large producer in the past. Ore mined during development work is being stockpiled, and only one test shipment of 100 tons has been sent to AS&R's Leadville plant for processing. Also included in the Keystone claims are 50 uranium-vanadium claims near Rifle and Park City has a contract drilling program underway there.



The Marysville, Utah, uranium deposits are attracting an increasing

MINING WORLD

amount of attention. They appear to be the first real discoveries in the country other than the carnotite-scolite ores of the Colorado plateau. The Marysvale ores appear to be autunite, the calcium uranium phosphate, a secondary mineral, and are distributed in a blanket underlying a leached capping in an altered quartz monzonite intrusive. The *Vanadium Corporation of America* has shipped three truck loads of the ore from the *Seegmüller* lease to Naturita, Colorado, for mill testing and the *Bullion-Monarch Company* is negotiating with the A.E.C. to purchase the ore from the *Farmer-John* property at Rifle, Colorado. Activity is certain to increase if the A.E.C. will buy the ore, as other properties have good showings and a market for development ore is all they need. Other companies have been active. J. J. Beeson of Salt Lake City has studied the area. *U. S. Vanadium Corporation* and the *Chief Consolidated* have also been active, and James Quigley has made a month's study of the district for the Centennial Development Company, the shaft sinking and tunnel driving company of Eureka, Utah.

Work is going according to schedule on the \$6,250,000 acid plant addition to the *American Smelting and Refining Company's* Garfield Chemical and Manufacturing Corporation plant at Garfield, Utah. The present plant has a capacity of 200 tons of 100 percent sulphuric acid per day. When the new plant is in operation late in 1950, production will reach 450 tons a day. The plant will have Cottrell electric precipitators, flues and conversion equipment.

A group of uranium claims in the Seven Mile section, 10 miles west of Moab, Utah, has been bought by the *Uranium Mines, Inc.*, a Los Angeles, California, firm. The properties have been owned by *William Churchill and Associates*, and the total to be paid for the claims is said to be \$65,000. Immediate mining operations are to be started by *Uranium Mines* under the management of Frank J. Reister of *Ross and Reister*, another Los Angeles company. Ore will be trucked to the Monticello mill operated by the Atomic Energy Commission. President of *Uranium Mines* is Roy James.

A new company, *Nevada-Utah Mining Company*, has been formed to operate properties acquired through a leasing agreement with *Wasatch Mines Company*, *West Toledo Mines Company* and *Kennebec Consolidated Mines Company*. P. V. Saleno of Los Angeles will be in charge. The claims are in the Alta Mining District, Utah, and several known exposures of commercial ore exist on them. Dr. F. F. Hintze, president of the *Arizona Antlers Mining Company*, said that through an exchange of stock with *Nevada-Utah*, his company has acquired a 25 percent interest in the new company and a 10 percent participation in net operations, and had

subleased to Saleno to operate the mines.

Tungsten and tin ores occurring in granite formations have been found on a claim owned by DeWayne Ekker, a rancher, near Cottonwood Canyon, Utah, on the south slope of Sheep Rock Mountains. T. A. Gustin, a prospector from Tintic, located the ore. The extent of the value of the find is yet to be determined, but samples so far have assayed around 27 percent tungsten and .55 per cent tin.

Construction of a uranium mill at either Marysville or Moab, Utah, is being considered by the *Green River Exploration Company* of Salt Lake City, according to A. E. Williams, president. The company has had Pro-

fessor J. J. Hayes of the University of Utah studying possibilities of simplifying the milling process and has approached the government for help on reduction of the ore. Green River has over 200 vanadium and uranium claims in Grand and Piute counties.

The Murray smelter of the *American Smelting and Refining Company* is to close October 1, according to R. D. Bradford, general manager of the Utah department. He explained that shortages of ore and other economic conditions now require that the plant be closed indefinitely, although AS&R will continue to handle inquiries from shippers and miners from its Salt Lake City office and to operate other western smelters.

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Butlers Solve Difficult Mesabi Hoisting Problem

How Butler Brothers are hoisting the ore from the South Agnew open pit mine makes an interesting story.

Faced with the problem of mining a narrow, deep orebody, the management had the following conditions to consider: The orebody is confined to a forty acre strip. Overburden, to the depth of 250', overlies the ore. The orebody extends as much as 600' downward from the surface. Due to the shape of the orebody conventional truck haulage would leave a large percentage of the ore tied up in benches. The same reason affected the decision to use conveyors. Therefore, the management investigated the possibilities of hoisting and decided to install the open air hoist.

Hoisting is done in counterbalance on a 38 degree inclined skipway. Designed to carry 25 tons of iron ore, each skip can easily hold one 20 ton truck load. The skips are 8' wide, 5' deep, and 12' long. Loaded they weigh 50,000 lbs., empty, 30,000 lbs. The loading pocket at the bottom is built in movable sections to permit resetting

as the pit is lowered. Hoisting distance at present is 355' and will be extended to 830' on the last slice in the bottom of the pit.

The hoist is constructed by the Ottumwa people and has a drum 12 x 9'. Powered by a 1,250 hp. motor, the winding speed is 1,000' per minute and at the present writing one skip is being hoisted per minute.



For 120 years gold placers have been worked around Coker Creek, Tennessee, but until the advent of modern equipment no great success was reported. Recently Kenneth J. Hines of Tellico Plains found a 200' wide vein, 25' thick and extending 1,300' at a 45 degree angle into soft red Wacke ore. Gold particles here at times are visible to the naked eye. Open pit mining is possible on several sections of a 2,000 acre area liberally mineralized. Hines proposes to mine

with bulldozer and loaders and to haul to the mill which pulverizes 10 tons an hour and is equipped with a 15-30 ton an hour Clark washer. No mercury or flotation is required.

The old Ringwood iron ore mines, Ringwood, New Jersey, which have been producing ore since the pre-Revolutionary times, have been reopened by Patrick Moran. At the Cannon mine, 200 men have been employed. The Peters shaft which is 2,700' deep, is being rehabilitated and an estimated 600 men will be on the working force when the shaft starts operating. Moran bought the mines for \$1,275,000.



At the Hill-Anner mine at Calumet, Minnesota, Inter-State Iron Company is excavating in preparation for the addition to its washing plant after the shipping season. A new tailings pond on one of the old dumps near the plant is also being prepared, since the expiration of the present lease in which Great Northern Ore is a participant leaves the company in need of a pond. The mine is at present loading some ore from the Delaware No. 1 for the Oliver Iron Mining Company.

The Greenwood mine of Inland Steel Company at Ishpeming, Michigan, has reduced its operations to one shift a day. R. D. Satterley, general superintendent of Inland's ore mines, explained, "Inland's requirements of Greenwood ore can be satisfied for an indefinite period at this rate of operation."

A Michigan committee composed of a senator and two CIO miners' union representatives recently returned from Washington with the report that Federal aid for Upper Peninsula copper mines may be forthcoming.

Fifteen or twenty years ago the general opinion was that little further stripping remained to be done on the Minnesota iron ranges. In 1948, however, a total of 72,876,409 cu. yds. was moved of which about 65 percent was in St. Louis County. Itasca County (the west Missabe range) contributed 16½ million yds. and the Cuyuna range nearly 9 million yds. With the introduction of more efficient equipment for stripping and for extracting of lean ores, large yardages of stripping will probably continue to be removed in the coming years.



FOR THE SAKE OF SAFETY

A tractor with dozer blade is always used when power shovels are moved up or down grades at properties of the Pacific Isle Mining Company. Shown is an Allis-Chalmers HD-19 tractor with Baker hydraulic dozer following closely behind a 1½-yd. Lima shovel as it is moved from the Lamberton Mine. A few moments later a Type 1002 Lima with a 2½-yd. dipper was moved down the grade with the tractor backing ahead of it. Only a few inches of clearance are allowed between dozer blade and the crawler tracks of the shovel. Some operators on the Range move their shovels with the boom down grade and the dipper a few inches above the road surface so that it can be dropped to act as a brake in case of trouble. Other operators have other systems. However, at Pacific Isle it is policy: When a shovel goes up or down, the tractor and dozer go along—for safety's sake.



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Gabbs Magnesite Project Is Now Under Way

Production of magnesium oxide and processed brucite by Basic Refractories, Inc., and Standard Slag Company at Gabbs, Nevada, will be more than doubled now that Basic Refractories has acquired the property of the war-time Basic-Magnesium, Inc. Basic Refractories has operated in the district for some years and seized the opportunity to expand when BMI's property recently was put up for sale by the government. During the war quantities of metallic magnesium were produced at the plant.

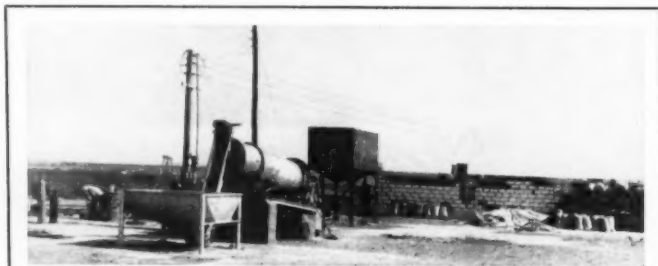
Basic Refractories has acquired the ore deposits as well as the machinery belonging to BMI.

The property consists of many steel buildings, and open pit mining, crushing and calcining machinery besides a mountain of magnesium ore.

A kiln, 9' 6" x 380' 0" is being installed now for operation in January. The 40 men on Basic Refractory's payroll will be increased to about 165. Standard Slag's payroll will also increase.

The company sends brucite and magnesium oxide to eastern processing plants for conversion into heat resisting products.

Manager of Basic Refractories is Norman E. Hansen; for Standard Slag is R. O. Jones.



Photograph courtesy The Lordsburg Liberal.

LORDSBURG PERLITE PLANT IS BUILT

According to C. W. Horzmann, who was partly responsible for bringing the industry to the district in 1946, a perlite expansion plant has been installed on Marshall Kuykendall's property at Lordsburg, New Mexico, and he is also to build a block plant soon. Since 1946 about 1,000 acres of perlite-bearing land has been filed on, and the industry has become so active that a second expansion plant is under construction. The raw ore is found in gravel form, is popped in a rotating furnace at the plant at 1,750 degrees of heat until the rock is about ten times its normal size and many times lighter. Laboratories have developed around eighty-three different uses for the finished product, including insulation and plaster.

Dredging Continues In Northern California

About 3,000 cu. yds. of gravel is being handled daily by the V. B. Bennett dragline at the Buckeye Creek placers near the old mining town of Stringtown in Northern California.

Bennett had been dredging in the area near Douglas City, Trinity County, but moved his dredging operations to the new site a short time ago. Here the channel is 150' wide and runs along the creek about three miles. The gravel deposit is around 11' deep.

The equipment being used includes a trommel, stacker belt, washing plant, and centrifugal pump. A crew of 15 men handles the work.



Gold placer mining operations have been started 12 miles south of Willcox, Arizona, at the junction of Malay and Dos Cabezas Creeks on the road to the Wonderland of Rocks. A bulldozer has cleared a tract several acres in extent in preparation for the installation of heavy machinery to dig to bed rock. About 10,000 yards of gravel will be moved, according to estimates, before the water level is reached and actual placering can begin. The property, known as the *Gold Bend*, covers the channel for a mile

and one-half in length. The work is being supervised by C. W. Gabrielson, 2427 Poinsettia Street, Phoenix, Arizona.

The *Little Nugget* group of claims, eight miles from Wickenburg, Arizona, on the Constellation Road, have been purchased by Edward E. Ashurst, Isaac Campbell and Manuel J. Campbell from D. W. Pickett. The

LAWRENCE B. WRIGHT, consulting geologist, has been in Prescott, Arizona, further developing the Rocky Mountain Mines Company's property and also spent some time at Republic, Washington, at the Knob Hill No. 1 gold mine which he had been geologizing.

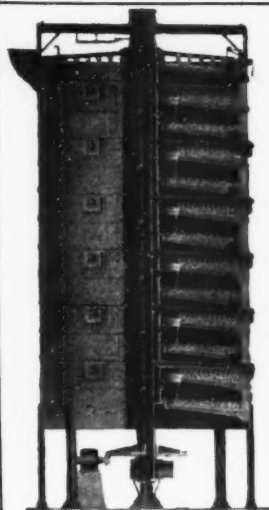


Little Nugget, a silver-lead property, has been developed by a 90' drift which is to be extended. All necessary mining machinery is said to have been acquired. Assisting in the work will be Ashurst's son, Aaron E. Ashurst, who has been employed in mining operations at Jerome, Superior and Miami. The elder Ashurst, an attorney, has operated mining properties in California, Oregon and Nevada.

John Marley and Associates of Dallas, Texas, are said to have purchased the *Abe Lincoln* copper mine, 12 miles east of Wickenburg, Arizona, from Ed Hill and Frank Bracken of Wickenburg. The new owners, who have been working in Mexico, are transferring machinery and equipment from that operation to the *Abe Lincoln* and expect to be in position to start work at an early date.

The No. 4 shaft at the old *Kay* copper mine, near Canyon, Arizona, north of Phoenix, is being unwatered so that the old workings can be examined and sampled. The work is being done by the *Black Canyon Copper Company, Inc.*, with George French, Route 8, Box 230, Phoenix, serving as manager. J. W. England, Jr., 944 East Van Buren, Phoenix, is president of the company. A crew of seven men is employed on a three-shift basis.

Five men, working as partners, are undertaking the development of the *High Five* group of three gold claims in the Pike Peak mining district. The claims are owned by C. M. Griffin, 18½ Grand Avenue, Glendale, Arizona. Charles Cummings,



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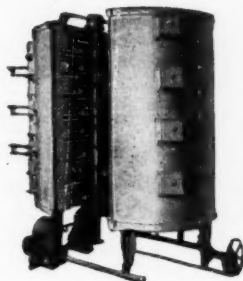


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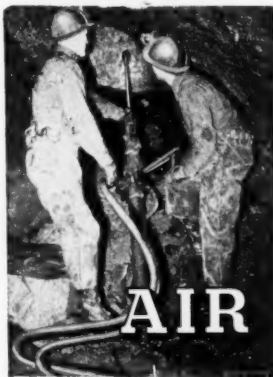
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also of Glendale, is directing the work.

Preliminary shaft repair and unwatering at the *Hidden Treasure* group of gold claims, near Bumble-

bee, Arizona, has been started by the *J. L. Mining Company*. J. L. Hatchett of Phoenix is president of the company. W. S. Ballard, Bumblebee, is manager, employing three men.



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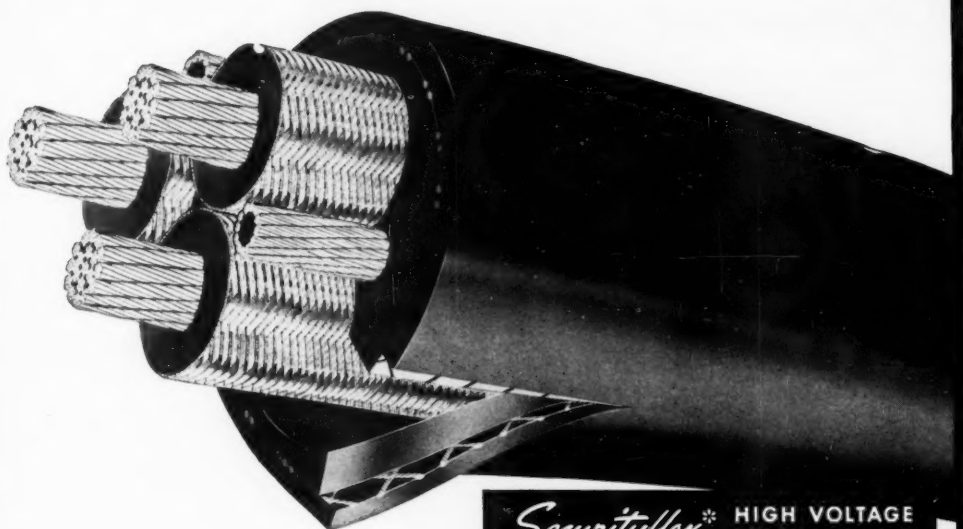
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NEW METHODS—NEW EQUIPMENT

Two GM Diesels Power New Euclid 1-FFD

The new model 1-FFD 34-ton tandem axle rear-dump Euclid featured at the 1949 Mining Congress Exposition in Cleveland, Ohio, is powered by two 190 HP General Motors Diesel engine-torque converter units each driving one rear axle which eliminates the conventional inter-axle power divider. A three speed Torqmatic transmission manufactured by the Allison Division of General Motors does away with clutch pedal or manual shifting of gears—operator can change to proper gear under full power and at any travel speed.

Due to their symmetrical cylinder blocks, the GM Series 71 Diesel engines may be assembled with blowers and accessories on either right or left-hand side. This allows compact mounting of two "matched" engines side by side. Long a feature of GM Diesel engines in "Twin 6" arrangement or as "matched pairs" for twin screw marine propulsion, this is the first time two of these engines have been so mounted for this type of truck application.

Fully field-tested at the M. A. Hanna Company operations on the Mesabi iron range, the mammoth hauling unit was designed for mining and construction jobs where large tonnage must be moved in off-the-highway service. Hydraulic booster steering and steering brakes on the drivewheels make the big "Euclid" easy to steer and easy to handle in close quarters or on difficult haul roads.

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For general use around surface plants of mines are the Coles Cranes which have the cantilever type boom mounted on a centrally situated frame so that in the horizontal position with the crane close to the gondola car the machine is capable of operating very successfully. This feature enables operators to get closer to the work in a very narrow gangway or aisle. The model 8502 (illustrated) has a turning cycle of 40 ft. with ample stability through a full 360° swing of the superstructure. A minimum load can be lifted at any point of the swing. Coles Cranes' four motions, hoisting, swinging, derricking, and traveling, can be operated simultaneously although each is operated by a single separate motor. All Coles Cranes are equipped with automatic safe-load indicators which

protect not only the operator but also the expensive equipment.

Dealers have been appointed throughout the United States and they will be stocked with spare parts for emergencies.

Folders on several models of Coles Cranes may be obtained by writing to MINING WORLD, 121 Second St., San Francisco, Calif.

Mines Equipment Co. Acquired by Joy

Joy Manufacturing Company, Oliver Building, Pittsburgh, Pa., announces the acquisition of all the capital stock of Mines Equipment Company as of June 30, 1949.

Joy Manufacturing has been the exclusive sales agent for the "Mines" line of electric power distribution systems in the Metal and Non-Metallic Mines and Quarries and will continue to manufacture the complete line of "Mines" String-a-lite, molded rubber connectors, sectionalized cable, cable vulcanizers, and Safety Circuit Center breaker boxes.

Three New Blue Brute Air Tools Announced

Three newly designed Blue Brute air tools, a clay digger, trench digger and a breaker, were recently announced by Worthington Pump and Machinery Corporation, Harrison, New Jersey.

The new tools feature refinements in design and manufacture, and include a four-bolt handle; built in lubricator; replaceable bronze cylinder bushing; replaceable chuck bushing; and interchangeable handles. Two major advancements are incorporated in the new design: a streamlined latch-type Retainer, enables trimming and breaking in close quarters without damaging the retainer fulcrum pin because there are no side projections; and a new, simple metering-type valve which is unaffected by wear. The new design provides larger bearing surfaces and shorter piston travel, which lengthens the life of the tools.

Complete specifications may be obtained by writing to MINING WORLD, 121 Second Street, San Francisco, California, for Bulletin No. H1200-B37.

Booklet Describes "Cat" Distributor Organization

"Let's Take a Look at Your 'Caterpillar' Dealer, a twelve-page two-color booklet, has recently been released by Caterpillar Tractor Co., Peoria, Illinois to highlight the workings of the world-wide distribution organization maintained by the manufacturer.

The booklet gives the reader an insight into the parts and service facilities afforded him by the distributor, with emphasis placed upon worldwide availability. Parts handling and service facilities of various distributor organizations is pictorially displayed.

Copies of the booklet may be secured free of charge by writing MINING WORLD, 121 Second Street, San Francisco, Calif.

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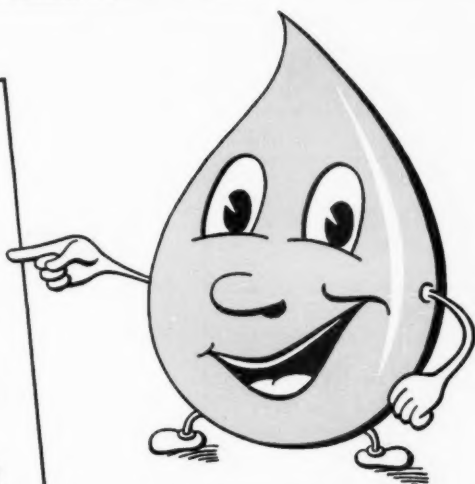
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Continued from Page 72

stalled machinery and buildings. About 200 tons of dolomite will be milled, crushed and screened daily at the site. Dolomite is utilized in furnace linings, plaster, white cement and roofs, among its other industrial uses.

Green Gems, a bentonite property in the Inyo range east of Independence, California, has been leased by Jack Burkhardt to the Filtrol Company of Los Angeles. The mine is said to contain green gems of good quality.

Installation of a 50-ton cyaniding plant has begun at the *Pine Hill* mine, 15 miles southwest of Grass Valley, Nevada County, California, by *Vivian Mining Company*, lessees. According to B. C. Austin, San Francisco, who is managing director of Vivian, as soon as the plant is up, operations will resume on a substantial tonnage of ore now blocked out.

Inside the Joshua Tree Monument, Riverside County, California, two gold mines report developments. *Mission Mine* is adding considerable equipment and has put its entire crew

to work assembling it so that underground development and mining has stopped temporarily. Several miles from here Les Cross, Fred and Tom Heely of Twenty-nine Palms are deepening a shaft on their property and are stockpiling ore until it can be accepted by custom mills.

Yuba Consolidated Goldfields is operating 10 dredges and is still expanding its operations. Five dredges operate in the Yuba River field not far from Marysville, California. Two are along Feather River, one is soon to start at Butte Creek, Butte County, and one operates in the Callahan area of Siskiyou County. Two operate near Folsom in Sacramento County. Besides these operations, the company will begin this fall to dredge some 40,000,000 cu. yds. on property in which it owns a half interest in Nevada with Round Mountain Gold Dredging Co. Redredging of 500 acres in the Yuba River field is planned to a depth of 124', and the river will be diverted during this process.

The old *Seven Aces Mine*, Alleghany, Sierra County, California, has been taken over by Roland De Grio, who has incorporated the company under the new name of *Hub Mining Company*, of which he is president and general manager. The mine is developed by 1,350' of workings and opened by a shaft of which 200' had caved in. De Grio has rehabilitated the shaft and repaired and installed machinery, rail, hoists, pumps and other equipment. Approximately 500,000 gallons of water was pumped out, and the main orebody, first developed in 1913, was found in a completely caved area which is now being opened up. The mine, when finally rehabilitated, gives evidence of being a gold producer of some size.

NEVADA

A new 50-ton pilot mill will probably be in production at the end of this month on the *Kingston Canyon Mine* property, Austin, Nevada, according to E. B. Crouch, superintendent. The mine has been under development for some years during which time no gold has been produced. With the mill operating, mine officials estimate that within several more years capacity may be stepped up to 250 tons, since ore so far blocked out shows good values.

The *Valmy* lead-silver mine in Buffalo Valley, Nevada, near the Humboldt-Lander County lines may be coming to life again with the building of a concentrating plant and mill being considered. The mine has been extensively developed in the past and some 7,000 tons of ore exist

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- ☐ CONCENTRATORS—(18) Humphreys 5-turn Spiral Concentrators.
- ☐ CRUSHER, JAW—(1) 9" x 16" Denver Type H Jaw Crusher, alloy iron frame and bumper, grooved flywheel.
- ☐ CRUSHING ROLLS—(1) 24" x 20" Rogers Iron Works Crushing Rolls with motors and drives. Nearly new.
- ☐ ELEVATORS—(4) 42" high Belt and Bucket Elevators, heavy duty type with 18" x 8" 8 1/2" malleable iron buckets; cast iron pulleys; take ups; heavy duty rubber covered belting; and 25 HP gear-motor speed reducer with starting equipment for 3 phase, 60 cycle, 440 volts.
- ☐ FEEDERS, ORE—(4) Merrick Feedo-weight Feeders, 20" belt, 1 HP vari-speed motor drive and controls.
- ☐ FILTER—(1) 8' dia. x 4' face Oliver United Hopper Dewaterer Filter, top feed type with 5 HP Reeves vari-speed motor, drive and controls.
- ☐ FILTERS—(1) 6' x 3-disc and (1) 4' x 4-disc American Filter, belt drive with vacuum equipment.
- ☐ JIG—(1) 8" x 12" Duplex Denver Selective Mineral Jig, right hand, with motor and drive.
- ☐ PLACER UNIT—(1) No. 3 Denver Trommel-Jig Placer Unit with 8" x 12" Duplex Denver Selective Mineral Jig complete with pump and 4 HP Fairbanks-Morse gas engine.
- ☐ PUMPS—(1) 4" Triplex and (1) 6" Triplex Denver Adjustable Stroke Diaphragm Pump with gear-motor and drive.
- ☐ SAMPLERS—(2) Geco Samplers, 21" cutter travel, one dry, one wet cutter.

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in the dump. Ed Hand, Harry Howton, N. B. Ellis and Elmer Hillard, all Nevada mining men, are carrying on an investigation of the potentialities of the property, and present lead prices make the project encouraging.

About 1,000 tons of perlite are being shipped out from the huge Cow Creek perlite deposit near Lovelock, Nevada, by Schwabrow, Schendel and Chapman to a Maryland engineering firm. The Cow Creek deposit has popping qualities far exceeding those of other deposits investigated by persons interested in Nevada perlite, according to F. E. Schundler, a Joliet, Illinois, processor. Chapman of the above firm says he has developed a new popping method which cuts down waste when the ore is in the furnace.

Kennecott Copper Corporation has leased nine claims in the Gold Run mining district near Golconda, Nevada, on a ten year basis with an option to buy. The claims are owned by Frank S. Shriver and consist of the Golconda No. 1 through No. 8 and the Bluebird.

A lease has been taken on Basic Metals, Inc., property by Western Associated Industries, according to L. M. Timmons, superintendent in charge. The property comprises 1,900 acres of dry lake bed 45 miles northwest of Tonopah, Nevada, and has considerable machinery and equipment

on it. Western Associated is also acquiring 1,500 more acres and building a pilot plant which will treat four tons of lake bed ground per hour. A hydrosol pump lifts the material to the upper end of the plant and then a gravity process is used to extract the minerals which are chiefly mercury and gold. Core drilling to 310' has shown no decrease in the value of the deposit. Reason for the lease of Basic Metals was the recent death of president, Frank Hoeckstra.

Gold Seam Mining Company of Albuquerque, New Mexico, plans to reopen its mine near the Tonopah Divide, Nevada, according to C. L. Ritt, president. Considerable development is to be conducted, and the 200' shaft on the property will be reconditioned. Ore found so far shows good values and after it is mined will be sent to the Newmont mill at Goldfield for processing.

William Garrett, Arthur Coleman and Robert Perkins are mining uranium ore in the Virgin River area, Gold Butte district, Nevada. The ore appears to be running between 10 and 11 percent uranium and is said to be the richest found in Nevada so far. Mining engineers classify the metal as samarskite and it is black and heavy, resembling pitchblende.

Still going on is the churn-drilling program at the Pioche, Nevada, mines owned by Combined Metals Reduction Company. The object is to keep about 10 years ahead of mining operations and between four and six drills are constantly working.

J. G. Atkins, Joe Aduddell and Don Fields have been working their claims in the Gilbert district northwest of Tonopah, Nevada, all summer, and have bought the Gilbert Bros. mill, which, when it is reconditioned, will handle all their ore. The men get a fairly high grade of gold ore by selective mining and at present send it to Dayton for milling.

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A good deal of success is reported by Douglas B. White, independent mine owner of Silver City, New Mexico, in leasing old mines, long abandoned, and reworking them with new methods and machinery. At present operating the old Hanover mine in Grant County, White says he is recovering values in spite of low metal prices.

Core-drilling of leased holdings in the Carlsbad area, New Mexico, is underway by the Southwest Potash Corporation. The company is a subsidiary of American Metals Company, Ltd., and is carrying on its exploration under the director of Victor Bongard.

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